FEEDSTUFFS

The Weekly Newspaper for the Feed Industry

Volume 31—Number 37 | SEPTEMBER 12, 1959 | 1 Year $5, 2 Years $8

Elevator Group Issues Memo on Storage Costs

KANSAS CITY—A memorandum giving the basic facts about grain storage costs was sent this week to 2,000 editors of newspapers, magazines and trade publications by the Terminal Elevator Grain Merchants Assn. In an accompanying letter to the editors, Frank A. Theis, Simonds-Shields-Theis Grain Co., Kansas City, president of the association, points out that the commercial grain trade is determined to help resolve the growing controversy over the country's costly farm program.

Mr. Theis points out that the cost of storing and conditioning government stockpiles is now $1.3 million a day, but this is due primarily to the enormous size of the surplus, not to excessively high storage rates. The government-approved storage rates are generally less than those paid by private renters and provide fringe benefits far exceeding the basic storage function, such as complete responsibility for grain in storage, assumption of financial risk in building new storage facilities, and keeping stocks fresh.

Rates paid warehousemen are neither subsidy nor "gravy," Mr. Theis points out, but legitimate charges for services rendered, and grain firms

(Turn to MEMO ON STORAGE, page 133)

FEEDSTUFFS *Features This Week*

RUMEN NUTRITION: A highly significant article concerning a new approach to rumen nutrition starts on **page 18.**

MANAGEMENT: The manager is described as the key man in the profit performance of any feed and farm supply business. **Page 40.**

BROILER FEEDING: Observations on contract feeding of broilers made during a tour of southern states are reported on **page 52.**

BULK HANDLING: Solutions are suggested for bulk handling problems on **page 64.**

GRAIN DRYING: An agricultural engineer outlines the principles of grain drying, beginning on **page 68.**

— REGULAR FEATURES —

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Broiler Industry Consolidation Seen; Unextracted Soybean Meal Studied

By Special Correspondent

GEORGETOWN, DEL.—"In five years not over 25 companies will produce well over half of our national broiler production," Harold Snyder, president of Arkansas Valley Industries, Inc., told 125 leaders of Delmarva's broiler industry at the annual poultrymen's open house at the Georgetown Substation of the University of Delaware.

"The people who want to stay in this business are going to have to combine interests or go under," Mr. Snyder said.

As the leader of a merged group of feed men, hatcherymen and processors in Arkansas, Mr. Snyder directs an integrated operation producing 15 million broilers annually.

Research Reported

The open house also included reports on some of the recent broiler research by University of Delaware scientists.

They told of additional studies on unextracted soybean meals and soybean oil in broiler diets and noted that the control diet containing regular dehulled extracted soybean meal produced the heaviest broilers with the best feed efficiency.

Also reported was a study indicating that use of less than normal floor

(Turn to BROILER INDUSTRY, page 139)

Curbs on Swine Through Higher Meal Price Seen

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—U.S. Department of Agriculture decisions on the agency's combined problems of politics, swine and edible fats and oils appear likely to be solved on a birth control basis—birth control of swine.

This policy is one of birth control effectuated through price control over the commodities which might encourage swine production.

It is now learned through an articulate official of USDA that the political goal may be described as follows: Put a pork buying program into action after the hog breeding season has ended about next March-April, and in the meantime try to hold feed costs at a relatively high level, and then later let prices take their own position in the market place.

It has been the observation of this reporter that as the new soybean crop comes into focus—it is now

(Turn to CURBS ON SWINE, page 133)

Centennial Mills Closing Feed Unit

PORTLAND, ORE. — Centennial Mills, Inc., has announced that it is closing out its Centennial-Crown Portland Feed division, effective Sept. 14, 1959, after 30 years in the Pacific Northwest feed business.

Officials said Centennial feeds still will be manufactured at Centennial's Wenatchee plant for distribution in the territory now served by the Wenatchee mill. Certain specialty lines such as Crown's complete quality line of mink and fur feeds will continue to be manufactured and distributed as at present.

(Turn to CENTENNIAL, page 133)

Pet Food Industry 'on the March,' Meeting Indicates

By DON E. ROGERS
Feedstuffs Staff

CHICAGO—The pet food industry is definitely on the march, as evidenced by a turnout of nearly 300 delegates to the second annual convention of the newly formed Pet Food Institute held at the Drake Hotel Sept. 9-10.

The committee on state and federal regulations submitted to the membership a proposed labeling guide designed to comply with all legal requirements and recognition of the increasing importance of labels due to the growth of super-market merchandising.

The proposed guide was discussed in detail by Henry A. Bucklin, president, after which group huddles were held by producers of wet food, the manufacturers of dry foods and those manufacturers involved in both wet and dry pet food production.

Directors, Officers

The following new directors were elected for the coming year: Allan D. Lynn, Bonnie Dog Food Co., Sacramento, Cal.; Arnold P. Mork, American Crab Meat Co., Inc., Boston, Mass.; A. J. Smith, Jr., Southern Canning Sales, Inc., Highlands, Texas and F. P. Fretwell, Spartan Grain & Mill Co., Spartanburg, S. C.

Outgoing directors were A. C. Adams, Murphy Products Co.; J. O. Cole, Cooperative G. L. F. Exchange, Inc.; K. S. Duffes, Standard Brands and M. E. Stultz, Ralph Wells & Co.

Officers elected were Joseph V. Getlin, Rival Packing Co., Chicago, reelected chairman of the institute; J. P. McFarland, General Mills, Inc., Minneapolis, Minn., vice chairman; Henry A. Bucklin, Byrne Marcellus Co., Chicago, reelected president, and Norman Berkness, Carnation Co., Los Angeles, secretary-treasurer.

Potential Market

"Zeroing in on the Pet Food Customer" was the theme of a talk by Arden Crawford, vice president, Market Research Corporation of America.

In explaining how large the potential market is for pet food, Mr. Crawford said 34% of all U.S. families (a

(Turn to PET FOOD, page 133)

REJECTS REQUEST TO BUY BRO-HENS

WASHINGTON—The U.S. Department of Agriculture has rejected a National Broiler Council proposal asking USDA procurement of as many as 2 million broiler hens for slaughter in order to help ease the fall output of birds.

The broiler industry appealed for use of Section 32 funds for their purposes—and it was on this basis that USDA ruled against them, even if the agency held any sympathy for the appeal for help in the face of continued large production and a small or no profit situation.

Section 32 funds, it was noted, are not now nor have they been seen as a means to halt production. They are used primarily to take off the market unmanageable surpluses of farm commodities.

Crop Report

Feed Grain Tonnage at New High

WASHINGTON—Total feed grain tonnage now seems likely to push well above the high point reached last year, according to the U.S. Department of Agriculture's September crop report.

Late season crops developed rapidly during August, USDA noted. Lack of moisture threatened many sections, but most areas got some timely showers. The feed grain crop index was at a new high of 142 (based on 1947-49=100), compared with 134 a year ago. Pasture and hay, however, were below a year ago.

Corn is now estimated at a record 4.4 billion bushels, 5% more than forecast on Aug. 1 and a sharp 15% above last year.

Oats production, at about 1.07 billion bushels, is 3% more than on Aug. 1 but 24% less than last year and 18% below average.

Sorghum grain is estimated at 566 million bushels, 11% more than on Aug. 1 but 8% less than last year.

Soybeans are estimated at 533 million bushels, slightly higher than forecast last month but 7% less than last year's record high.

Barley is estimated at 408.4 million bushels, 13% less than in 1958.

All wheat is estimated at about 1.1 billion bushels, 24% less than last year.

Flaxseed production is forecast at 23.8 million bushels, slightly above the Aug. 1 estimate but more than a third below last year.

Hay production of all kinds is estimated at 111.2 million tons, 9% below last year.

Pasture condition for the U.S. was reported at 78% of normal on Sept. 1, or 8 percentage points less than a year ago but equal to a month earlier. Conditions held up or improved in many sections, but not in such areas as the Great Plains, eastern Great Lakes states and parts of the South and West and eastern areas.

FEEDSTUFFS

A WEEKLY NEWSPAPER

Published by THE MILLER PUBLISHING CO.

2501 Wayzata Blvd., Minneapolis, Minn.

Address Mail to: Box 67, Minneapolis 40, Minn.

Telephone FRanklin 4-5200 - All Offices Serviced by Bell System Teletype

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Correspondence regarding subscriptions, changes of address, etc., should be sent to Circulation Manager, Feedstuffs, Box 67, Minneapolis 40, Minn. Single copies 50¢. Subscription rates: One year $5, two years $8, in the U.S., U.S. possessions, Canada and Pan-America. Add $3 a year for postage to other countries. Readers are urged to give prompt notice of change of address and to anticipate future changes by at least three weeks' advance notice. Ask postman for form 22-S. Feedstuffs accepts subscriptions only through its own offices; no subscription solicitors are employed or recognized. Associated publications: The Northwestern Miller, The American Baker, Milling Production, Cropiife, Farm Store Merchandising and Feediot.

Entered as second-class matter Feb. 25, 1947, at the post office at Minneapolis, Minn., under the Act of Mar. 3, 1879

The regional circulation of this issue is concentrated in the northwestern states

Top of the Hopper

DANGER SIGNALS AREN'T JUST flapping in the breeze. The red flag of warning to the broiler industry is getting close to being shredded from frantic waving. Placements have been reduced in recent weeks, but observers close to the industry feel that corrections of a more drastic nature are necessary.

Among these are officials of the American Poultry & Hatchery Federation. The association's current bulletin notes that developments in the last 30 days indicate the broiler industry has not been able to "shake its shroud of gloom" resulting from continued heavy production in excess of market needs. "With the fall and winter season of slower broiler demand just ahead, the industry so far has shown itself reluctant to make the necessary cutback. There seems to be a general attempt to 'outstay the other guy'."

APHF points out that the most pressing need is to liquidate breeder hens, and it warns, "Unless the trade faces the facts of life, economic attrition shortly can be frightful.

"Events in Georgia point to the probability of a tightening on further credit from lending institutions. The repercussions will extend far and wide."

The organization advises that hatcherymen would do well to get their production schedules in hand in anticipation of a drop in broiler chick demand as banks and lending agencies curtail credit to broiler contractors.

SOME DISAGREEMENT AND THEN some agreement with recent Feedstuffs comments are included in a letter from Frank T. Heffelfinger, II, general manager of Peavey Feed Mills:

"Our compliments on your fine editorial in the Aug. 22 issue of Feedstuffs . . . I wish I could agree that the basis for insisting on special mixes is mostly the result of college-trained or well-informed men operating farms. While it is true that farming units are being run by better-informed people, it is not these people who are most insistent on the special mixes. It is usually the relatively uninformed person, who has been soaking up a lot of the advertising of the persons offering competitive feed additives, and who takes a notion that he wants to try one of the additives which the feed company's research has shown to be no more effective than the present additive they are using.

"This is not intended to be a slap at the merchandising programs of persons involved in this business. While it makes it tough on us, I can understand their reasons for wishing to create a demand for their products.

"The conclusion reached in your editorial is really the only answer, and that is that feed companies must sell the results of their feeding program and establish the feeling of confidence and faith in their product through the research they do and the results obtained by the feeder."

The special mix problem, as the editorial noted, is an old one, but apparently it is causing more difficulty these days than it did just a few years ago. Comment from some feed manufacturers on the subject is frequently rather pointed, and it is understood that this will be one of the topics getting a thorough airing at the first conference of the American Feed Manufacturers Assn. Sales Executives to be held in St. Louis later this month. We would

(Turn to TOP OF THE HOPPER, page 139)

How's Business?

AN EVERY WEEK REVIEW OF FORMULA FEED BUSINESS VOLUME, INCLUDING PRICE, SUPPLY AND DEMAND TRENDS

The Labor Day holiday didn't seem to make much difference in the formula feed industry. Most manufacturers were rushed during the remaining four work days of the week but found that it wasn't much of a job keeping up with demand for their products. Business continues on the slow side. Even though hog and poultry feeds aren't what they could be in volume, they still are what mixers are depending on right now. Cattle feed business is especially slow at present in most regions. Offerings of some of the important feed ingredients were quite liberal and buying on the part of mixers and jobbers was reserved during the week. The wholesale feedstuffs price index declined to 75.4 during the week ended Sept. 8, from 75.9 the previous week and 82.8 a year earlier. Also on the skids was the feed-grain index, which at 68.8 this week was below the 69 mark of a week ago, but it was better than the 66.6 index of a year ago. The hog-corn ratio, based on Chicago prices, was 11 for the week, compared with 11.5 a week earlier and 15.3 a year earlier. (Ingredient prices in detail on pages 130-132.)

Northwest

It's "nothing to write home about," as one industry representative remarked, but formula feed manufacturing business was beginning to pick up a little bit this week in the Northwest. But the little improvement in demand was offset by lower prices for concentrate and complete feed, which followed continued dullness in a slower ingredient market. One manufacturer said his concentrates would slip about $2 in price compared to last week, and he and others reported cuts of 30¢@$1 in complete feeds. About the only feed ingredients that showed any spark at all this week were screenings. Most others were steady to weaker.

The Labor Day holiday pushed some manufacturers into heavy production for the remaining four days this week, but total output for the short week was about the same as last week.

Tonnage-wise, one manufacturer was having a better week than last—and was beating year-ago production marks. Another firm's feed demand was a little bit better than the week before, but some behind the same week a year earlier.

Poultry and hog feeds are holding onto the greatest share of production and sales volume. Cattle feeds apparently haven't caught on yet.

An industry representative who had been looking for opinions on what was responsible for the slowness of the industry, was told that feeders and, consequently, dealers aren't anxious to book feeds because of a declining feed market. It appears that they're looking for feed prices to hit bottom and bounce up before getting back in. "They don't like to buy on a declining market," the representative said. "They'd rather wait for a rising market." Generally poor livestock prices also have discouraged farmers when considering feed buying.

Southwest

Formula feed business in the Southwest seemed to pick up slightly following the Labor Day holiday. Although the majority of mills will be able to fill most orders in the four days this week, there are some plants that will run Saturday to make up for the lost production on Labor Day. Shifts have been skimpy in most instances, however, and backlogs are not large, so the sales pace is far from rushing.

Turkey feed demand is very good, with producers feeding birds plenty before the start of marketing. Laying rations are moving fairly well, especially for those organizations that have integrated programs. Broiler feed volume is down because of cutbacks in placements, but is still substantial.

Swine feeds are not moving nearly so well as they did early in the year, but manufacturers note that the baby pig crop should be along soon to bolster that part of the tonnage picture.

Forward cattle bookings continued this week and there was a slight pick up reported in the shipment of cattle feed, especially to the southern parts of the region where pastures are fading fast under hot dry weather. Dairy feed demand is fair.

Whether the little better tone is due to stocking up after a holiday remains to be seen. Farmers are still quite busy harvesting fall crops and putting in winter grains, factors that may be keeping demand from being better than it is.

Price lists for next week will be unchanged to down as much as $1 ton. Grain prices, in particular, were weaker.

Central States

The situation in the mixed feed industry does not seem to have changed much from the preceding week, other than the Labor Day holiday intervening. Some of the industry took advantage of the opportunity to extend the holiday a day or two in addition.

Compared with a year ago, business is definitely a little on the slow side.

Hogs have been inclined to hold their tops under the $15 level rather than over it, and some of the feed grains are beginning to show the influence of the heavy production totals this year. Even though oat production is well below that of 1958, the prospective corn crop is much larger than last year's.

Compared with a year ago, futures prices for corn at Chicago are about a nickel per bushel lower at this time. Cash corn, however, continues to bring fancy premiums over the basic September future, however (about 11¢ over as of Sept. 9). But with many in the trade looking for a very early movement of new crop corn, these premiums for the cash commodity are unlikely to be maintained.

Northeast

A scorching heat wave robbed consumers of any energy to buy and livestock of any desire to eat formula feeds and sales continued to droop this week. One trade spokesman said there is little likelihood of a sales improvement next week.

End products held up, with milk and eggs about steady and broilers quoted at 15¢ lb. and above in the East. However, some weakness in broilers cropped up in Georgia and Arkansas which may spread to this region.

The sales pattern remained unchanged, with egg mashes and grow-

(Turn to MARKETS, page 135)

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Chemell Financial Data Not Reported At Creditor Session

By Special Correspondent

GAINESVILLE, GA.—C. W. Milligan, management consultant for L. A. Chemell, told some 250 creditors at a meeting here this week that "accurate information concerning the financial status of the Chemell companies is not available for the meeting."

The meeting was held as a preliminary to a scheduled hearing in federal court in Atlanta on the Chemell hatchery interests' request for a six-month moratorium on existing debts.

In asking the court to name the firm of Peat, Marwick & Mitchell as auditors, Mr. Milligan said that in his own opinion the Chemell companies had assets in excess of liabilities. The court took no action on the appointment of the firm. Mr. Milligan also asked the court, presided over by J. Ellis Munday, referee in bankruptcy, to approve, with consent of the creditors, the continuance of the companies involved under Chapter 2 of the Bankruptcy Act.

He also asked the creditors present to sell Chemell materials and supplies on certificates of indebtedness and said Chemell will present a complete financial plan not more than 30 days after finalizing of the complete corporate structure, with issuance of a certified balance sheet, but not later than Dec. 31, 1959.

The creditors will be represented in Atlanta by committees selected at the Gainesville hearing. Members serving include Al O. Bryan, Ralston Purina Co.; John Andreas, Central Soya Co.; Hugh Koughan, General Mills, Inc.; T. T. Judge, The Pillsbury Co.; J. M. McRae, First National Bank, Gainesville; Tom W. Lauderdale, Deposit Bank & Trust Co., Jackson, Miss., in addition to others representing breeders, hatcheries and suppliers.

Since all the time was spent setting up the committees, there was no time to discuss the proposed plan, and as a result the Atlanta hearing in the federal court, originally set for Sept. 14, has been continued until Sept. 17.

Topics for Arkansas Feed Conference Listed

FAYETTEVILLE, ARK.—Additional topics and speakers for the two-day Arkansas Formula Feed Conference were announced this week by Dr. E. L. Stephenson, animal nutritionist, University of Arkansas Agricultural Experiment Station. The conference will be held at Fayetteville Sept. 17-18.

Other speakers were announced previously (Feedstuffs, Sept. 5).

The additional speakers and topics announced include the following: "Comparative Feeding Values of Different Vitamin A Sources," by Dr. W. P. Crawford, Chas. Pfizer & Co.; "Feeding Practices in Turkey Production," by Dr. T. T. Milby, General Mills, Inc., and "Which Antibiotic for Swine," by Dr. P. R. Nodland, University of Arkansas.

"Carcass Differences of Beef Steers as Reflection of Rations Fed," will be discussed by W. Wallace, University of Arkansas; "Roughage Capacity and Efficiency of Feed Utilization in Dairy Cattle," by Dr. O. T. Stallcup, University of Arkansas, and "Future of Lysine in Animal and Poultry Feeds," by K. N. Wright, A. E. Staley Manufacturing Co.

Participants in a panel on pelleting will include Dr. Stephenson, moderator; D. H. Hamm, University of Arkansas; C. N. Hultberg, California Pellet Mill Co., and Dr. M. L. Ray, University of Arkansas.

NiCarb Level Reduced For Replacement Birds

RAHWAY, N.J.—A lower use level for "NiCarb" as an aid in preventing coccidiosis in replacement flocks was announced this week by Merck & Co., Inc., Rahway. Company officials said experience gained since the introduction of this coccidiostat has demonstrated that the newly recommended level of .008% will provide sufficient protection under most field conditions. At the same time, they said, it will permit adequate exposure to coccidiosis for the development of immunity.

Merck is introducing the new use level for replacement birds to improve the likelihood that sufficient infection will be present to allow immunity to develop, according to the company announcement, and it offers an economic advantage to the poultryman.

"The new use level of 'NiCarb' is of special importance during the spring season, when an unusually high percentage of coccidiosis problems occur," Merck said.

Feedstuffs Mostly Steady to Lower

Average feedstuffs price changes were small during the holiday shortened week ended Sept. 8, and most of the changes were on the downward side, it was indicated by reports to the U.S. Department of Agriculture.

Soybean meal was off 60¢ ton, bulk, but linseed meal and peanut meal were up 20¢ and 25¢, respectively.

Of the animal protein feeds the only improvement of the week was in meat meal (25¢ ton), but tankage slid 75¢ and fish meal held steady at $128.

Other exceptions to the generally lower market were brewers' dried grains (15¢ ton), rice bran ($2.50 ton) and two feed grains, oats and barley.

Average Bulk Prices and Index of Weighted Prices*
(Dollars per ton)

Feed	Sept. 8, 1959	Sept. 1, 1959	Change from previous week
OILSEED MEALS			
Prices at prin. mkts.			
Soybean meal	62.15	62.75	— .60
Cottonseed meal	59.65	59.70	— .05
Linseed meal	74.00	73.80	+ .20
Copra cake or meal	70.50	70.50	...
Peanut meal	54.50	54.25	+ .25
Index	81.4	81.9	—0.5
ANIMAL PROTEIN FEEDS			
Prices at prin. mkts.			
Meat meal	78.00	77.75	+ .25
Tankage	79.75	80.50	— .75
Fish meal	128.00	128.00	...
Index	77.8	77.8	...
GRAIN HIGH-PROTEIN FEEDS			
Prices at prin. mkts.			
Gluten feed & meal	42.40	43.00	— .60
Dist. dried grains	48.70	48.70	...
Brewers dried grains	38.40	38.25	+ .15
Index	67.8	67.6	—0.6
WHEAT MILLFEEDS			
Prices at prin. mkts.			
Bran	34.60	34.90	— .30
Midds. and shorts	37.00	37.45	— .45
Index	64.7	65.4	—0.7
OTHER MILLFEEDS			
Prices at prin. mkts.			
Hominy feed	39.40	39.55	— .15
Rice bran	31.00	28.50	+2.50
Index	60.5	60.8	—0.3
ALFALFA MEAL			
Prices at prin. mkts.	47.85	48.00	— .15
Index	92.1	92.4	—0.3
MOLASSES, FEEDING			
Prices at prin. mkts.	23.43	23.43	...
Index	69.7	69.7	...
ALL FEEDSTUFFS			
Index	75.4	75.9	—0.5
FEED GRAINS			
Prices at prin. mkts.			
Corn	42.70	42.95	— .25
Oats	44.10	43.80	+ .30
Barley	41.90	41.65	+ .25
Grain sorghums	37.30	37.70	— .40
Index	68.8	69.0	—0.2

*Base period of index is 1947-49.

L. H. Abbott W. R. Abram

TRANSFERS—Transfers of two territory managers of Dr. Salsbury's Laboratories were announced recently by H. G. Bos, director of marketing for the poultry health firm. Leslie H. Abbott, a field representative for the company since 1947, has been transferred from the Kentucky area to southern Georgia, with headquarters at Albany. Succeeding Mr. Abbott in Kentucky is W. R. Abram, with new headquarters at Russell Springs, Ky. Mr. Abram formerly covered northern California.

Anaplasmosis Death Reports More Common

DIXON SPRINGS, ILL.—Reports of anaplasmosis outbreaks causing cattle deaths and illness are becoming more common in Illinois. Dr. M. E. Mansfield, veterinarian at the University of Illinois experiment station here, says conditions indicate the disease may show a marked increase this year.

"Since livestock operators encountered more of this disease than usual during the summer and fall of 1958, there are probably more carrier animals in Illinois herds this year," Dr. Mansfield commented.

The carrier animals, according to Dr. Mansfield, are a continual source of "seeded" infection in herds of which they are a part. Flies, ticks and mosquitoes, primary spreaders of the disease, have a better opportunity to infect healthy animals when there are carrier animals in the same herd.

He explained that the disease cannot spread simply by contact between animals. It must be transferred with infected blood by insects or mechanical means. A blood test has been developed to indicate whether an animal is a carrier.

Construction Begun

DOUGLAS, GA.—Construction has been started on the new C & S Milling Co. plant here, which will manufacture feeds under the Swift & Co. label.

The mill is being constructed by Gulf State Construction Co., Atlanta. Sprout, Waldron & Co. is principal supplier of milling machinery.

REGISTRATION BY WIRE, PHONE SUGGESTED

KANSAS CITY—Advance registrations for the Feed Production School are running ahead of a year ago, and feed men this week were advised that if they are planning to attend the event, they should get their registrations in as quickly as possible.

The 1959 Feed Production School will be held Sept. 23-25 at the Continental Hotel in Kansas City. In addition, there will be a Small Mill Short Course on Saturday, Sept. 26.

With mail registration ending, school officials advised those not yet enrolled to register by phone or wire with Feed Production School, Inc., 20 W. 9th St. Bldg., Kansas City, Mo.

Signed up so far for the school are feed men from five foreign countries, 41 states and five Canadian provinces. Nearly half of those registered for the regular production school will stay over for the Small Mill Short Course.

North Carolina Auction Suspends Operations

By Special Correspondent

LEXINGTON, N.C. — The North Carolina poultry auction suspended all operations due to lack of broilers available for open bidding, Milton Trawick, president, reported this week.

Mr. Trawick said the location of the auction in Lexington, in the approximate geographical center of the state, was a contributing factor to the failure of the operation, since many buyers were required to drive as much as 300 miles round trip three times a week to attend the auction. He added the same problem faced the producers, resulting in few broilers being offered.

"In addition to these two conditions, there apparently has been a greater cutback than the records indicate, and we learned the broiler business in North Carolina and adjacent South Carolina is more tightly integrated than we had anticipated, with many processors having control or prior commitment for broilers," he said.

"At the first sessions we had few buyers, but later when the buyers did show up, we had few broilers to offer. As a result, the board voted to cease all operations," Mr. Trawick said.

He added some consideration had been given to establishing auctions in other sections of the state with a central or main office, but he said no immediate action in that respect will be taken as the members of the auction, who have not suffered financially to date, agreed to "wait and see what happens in other sections."

According to Mr. Trawick, as well as other reliable sources, broiler producers in the Carolinas are operating with extreme caution, and while there are few empty broiler houses, there is little or no indication of any expansion or new building.

Strikes Not Affecting Animal Proteins Much

Animal protein feeds appeared to be strengthening this week, but it was the opinion of observers that firmness was brought about by better feed industry demand rather than any cut in production that may be resulting from packinghouse union strikes against Swift & Co.

The U.S. Department of Agriculture reported that for the week ended Sept. 8 the average bulk price in the U.S. for meat and bone meal was $78 ton, 25¢ better than a week before. But tankage slipped an average of 75¢ ton.

Heavy livestock marketings have produced a more than ample supply of animal protein and, apparently, supplies of meat meal, tankage and animal fats are far enough ahead of demand so that scattered plant shutdowns haven't been greatly significant. However, according to some observers, there is a chance that the packinghouse strikes may be contributing to the firmness in animal protein ingredients.

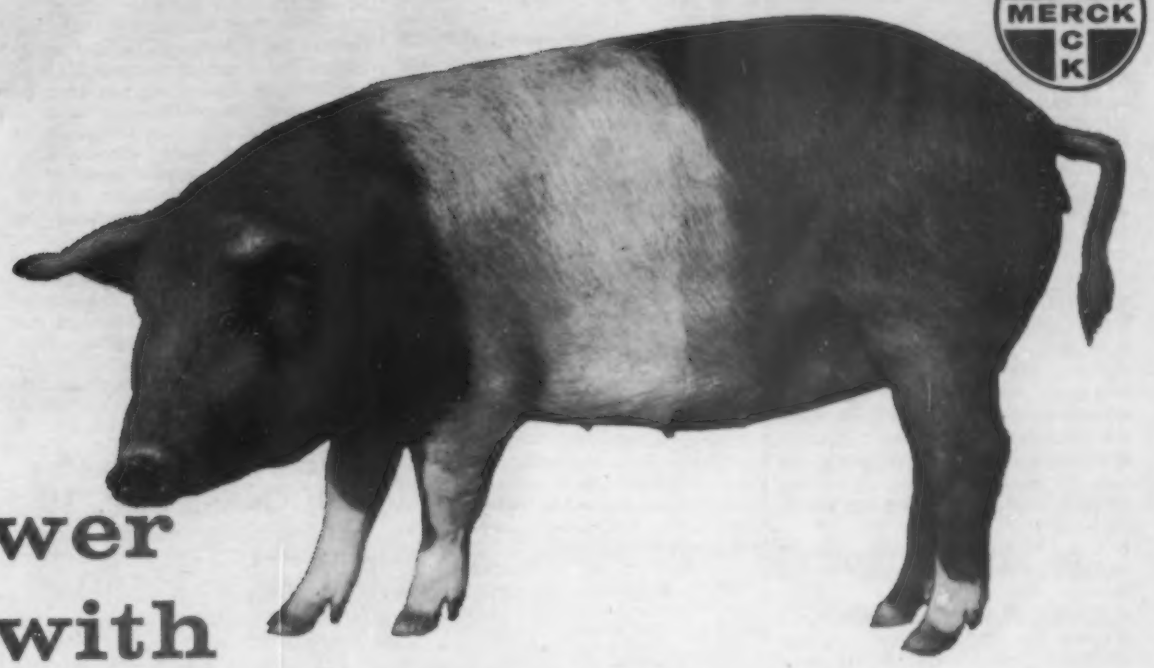
Firm Loaned $450,000

ALBUQUERQUE — An Albuquerque feed firm received the largest Small Business Administration loan in the Utah-Colorado-New Mexico area during August, according to Raymond A. Melton, SBA branch manager here.

Ravel Bros., Inc., farm and garden supply business, received a participating loan of $450,000 which matures in 10 years. Interest rate will be 5½%. An Albuquerque bank is participating in 25% of the total loan authorized, Mr. Melton said.

The firm recently completed a $500,000 feed and fertilizer processing mill.

MERCK



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Still looking for an effective, low-cost antibiotic supplement? Why not set up a split-pen feeding trial with PRO-STREP® and demonstrate—with on-the-farm results—how PRO-STREP, added to your next Merck custom premix, can pay off for you and your growers. Merck & Co., Inc., Chemical Division, Rahway, New Jersey.

the Merck brand of B_{12}...assured stability

B12

...uniformity and quality...

Recommended Vitamin B_{12} Levels in swine rations:

Prestarter	Starter	Grower
30.0 mg./ton	20.0 mg./ton	10.0 mg./ton

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No Action Reported | Midwest Accounts for Turkey Coin

University of Missouri Swine Research Results Reported

COLUMBIA, MO.—Swine research results with animal fat, antibiotics, hormone implants, rations, amino acid supplements and feeding levels were presented at the University of Missouri Swine Day recently.

Some of the research material presented at the swine day follows:

- Adding animal fat to medium and high protein hog rations increased daily gains and feed efficiency. There was little effect on backfat thickness.
- Several antibiotics stimulated satisfactory growth in unthrifty pigs.
- Hormone implants reduced backfat thickness and increased yield of lean meat.
- Gilts reached sexual maturity earlier when fed a low-energy ration.
- Preliminary tests indicate there may be some advantage in feeding antibiotics to sows during the breeding season.
- Amino acid supplements proved valuable in rations somewhat low in protein.
- A definite relationship was shown between the change in sow's backfat thickness during gestation and number of pigs farrowed. It was concluded that too much feeding during gestation is harmful.

ADDED FAT—Adding animal fat to medium and high protein hog rations gave increased daily gains and better feed efficiency in tests at the University of Missouri. Fat in the rations had little effect on backfat thickness.

These results were reported by Don Boenker, graduate assistant in animal husbandry.

Purpose of this research was to study effects of calorie content in swine rations on protein requirements. Nine lots of 10 pigs each were used. Pigs averaged 45 lb. at the start of the test.

Three levels of protein—13, 16 and 19%—were studied. Protein levels were reduced 3% after pigs reached 125 lb.

Three levels of calorie content were used also. Three lots of pigs, one at each protein level, received rations containing 7% animal fat. Another three lots received ground corn cobs in their ration to reduce calorie content. The other three lots received a ration with a medium calorie content, according to Mr. Boenker.

Adding fat to the medium protein rations increased average daily gains by .17 lb. per day. The increase was even greater on the high protein rations—.22 lb. per day. Adding fat to the low protein rations did not affect daily gain, Mr. Boenker reported.

Perhaps more important, the addition of fat increased feed efficiency at all three levels of protein. Hogs getting fat in their rations were 12-15% more efficient than hogs getting the medium calorie rations, and nearly 25% more efficient than hogs on the low calorie rations.

The different levels of protein, when studied by themselves, showed little effect on either rate of gain or feed efficiency. The differences resulted from the different calorie levels in the rations, according to Mr. Boenker.

Little difference was found in backfat thickness probes of the different lots. Pigs on the low protein ration (13%) with fat had slightly thicker backfat measurements. Mr. Boenker said one might expect the 7% fat in the rations to noticeably increase backfat thickness, but this didn't show up in this study.

In summary, Mr. Boenker said this test indicates higher energy rations may require somewhat higher protein levels. The test is being repeated to obtain further results.

As to use of fat in practical swine rations, Mr. Boenker says it depends on the price relationship between fat and the feed it would replace.

ANTIBIOTIC TESTS—In recent University of Missouri tests, several different antibiotics stimulated satisfactory growth in unthrifty pigs according to Dr. Leland Tribble, University of Missouri swine researcher.

He said the purpose of the test was to determine the value of various antibiotics for growing-fattening swine.

A group of rather small, unthrifty pigs 10 weeks old were used in this test. A 16% protein base ration was used until the pigs reached 125 lb. and then the protein content was cut to 12%.

One lot of pigs received 10 mg. of oxytetracycline per pound of feed. Another lot got 60 mg. per pound of feed of a mixture of sulfaquinoxaline, streptomycin and penicillin. A third lot of pigs received a combination of the antibiotics used for the other two lots.

Dr. Tribble said all lots gained at a satisfactory rate. Considering their initial condition, all treatments were satisfactory in stimulating performance of the pigs.

Average daily gain among the three lots varied from 1.6 lb. to 1.72 lb. Feed used per 100 lb. gain ranged from 322 to 350 lb. Dr. Tribble said these differences could have easily been due to feed waste.

HORMONE IMPLANTS—Hormone implants in hogs reduced backfat thickness and increased yield of lean meat, according to Bill Day, University of Missouri animal husbandry staff member.

Mr. Day explained results of a

(Turn to **MISSOURI**, page 134)

O. G. Bentley

F. W. Hill

N. L. Jacobson

TEXAS SPEAKERS—Three winners of American Feed Manufacturers Assn. nutrition research awards are scheduled to speak at the 1959 Texas Nutrition Conference Oct. 7-9, Texas A&M College, College Station, Texas. The three scientists are: Dr. Orville G. Bentley, dean of agriculture and experiment station director, South Dakota State College, Brookings, S.D., animal science award winner; Dr. F. W. Hill, professor of animal nutrition and poultry husbandry, Cornell University, Ithaca, N.Y., poultry science award winner, and Dr. N. L. Jacobson, professor of dairy husbandry, Iowa State University, Ames, Iowa, dairy science award winner.

Harold Grassl, 60, Dies in Des Moines

DES MOINES, IOWA—Harold W. Grassl, 60, sales manager and nutritionist for Tanvilac Co., Inc., until his resignation a year ago because of ill health died of cancer recently. He was president of Feed Institute, Inc., at the time of his death.

He started in the feed business in 1918 with the Quaker Oats Co., Chicago, and later was sales manager of the Albert Dickinson Co. In 1934 he became manager and partner of the Midwest Feed Mill, Chicago.

In 1937 Mr. Grassl became sales manager, feed division, Hess & Clark, Inc., Ashland, Ohio. Ten years later he was named sales manager and nutritionist for Davis Enterprises, Inc., Dayton, Ohio.

Mr. Grassl came to Des Moines with the Tanvilac firm in 1948.

Chicago Feed Club's Golf Outing Sept. 15

CHICAGO—The Chicago Feed Club is set for its fall golf outing on Sept. 15 at the Olympia Fields (Ill.) Country Club northwest of Chicago Heights. The tee-off period will be from 8:30 a.m. to 1 p.m.

Prizes will be awarded and a prime ribs of beef dinner is to be served at 7 p.m. The greens fee includes lunch. Free refreshments will be served between 11 a.m. and 6 p.m.

Survey Shows Broiler Supply Below Last Year

TRENTON, N.J. — A survey conducted recently among representatives of the broiler industry by the Northeastern Poultry Producers Council, Trenton, indicates that the marketable supply of broilers, projected from placements and egg settings into the first week of November, will run from around 6% below last year for early September to about 3-4% less in early November.

This prediction, according to NEPPCO News, portends an "over supply" again, since it has been estimated that last year's supply was anywhere from 10-20% in excess of what could be sold at profitable levels.

The price outlook for broilers, according to survey opinions, is one of general pessimism. September prices are expected to hang around 16¢ lb. and in October they may be in the 15@16¢ range.

NEPPCO's survey also revealed that producer attitudes toward starting chicks vary according to contract status. It was the opinion of the people in the industry questioned by NEPPCO, that producers with no contract are few in number and are "very cautious and worried." Those who contract to raise birds are "anxious to keep busy, fearful of losing their contract and/or unhappy with stricter contract terms." NEPPCO

(Turn to **SURVEY**, page 134)

CAPITAL COMMENT

BY JOHN CIPPERLY

Accurate Forecast

WASHINGTON—The U.S. Department of Agriculture's official crop report for Sept. 1 fooled everyone except a red-headed crop reporter agronomist, who two weeks before forecast approximately the level of soybean production for this year, listed officially by USDA at 533 million bushels. This agronomist can be found in the Merchandise Mart at Chicago. His name will be available on application here.

USDA's official figures bring into focus previous reports from here regarding the outlook for bean, cottonseed meal, cottonseed oil, soybean oil and soybean meal prices this winter. For the past two weeks this reporter has been trying to set forth the basic conflict within this whole situation.

Other topics of the report do not cover any major change in crops as far as the feed industry is concerned, except the relatively small decline in the cotton crop.

Even so, the USDA estimate of the soybean crop may shock some professional crop reporters and may also bring acclaim to the red-headed fellow in the Merchandise Mart.

Drouth Bill

WASHINGTON — This week Congress approved and sent to the White House a bill introduced by Sen. Karl Mundt (R., S.D.) which would make available to farmers Commodity Credit Corp. stocks of feed grains at price support levels in event of emergency conditions such as drouth, flood, tornado and other obscure conditions which usually appear in the fine type at the end of insurance policies.

The measure is permissive in its authorization to USDA and also carries a provision that such distribution is to be made through private trade channels, when operative.

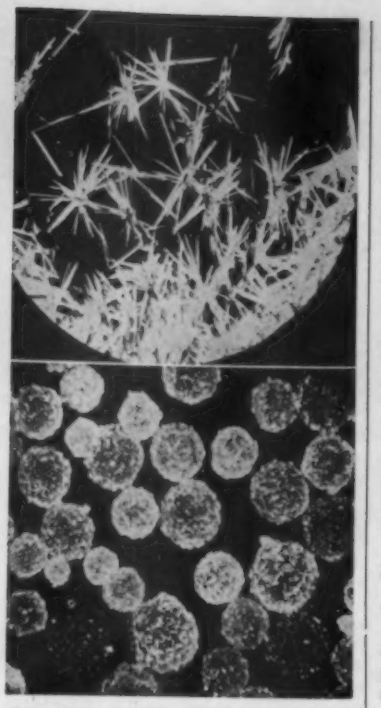
Officials are inclined to discount the Mundt measure except for the high head of political steam it might build up in the vital political campaign in 1960 when Sen. Mundt will be running for reelection.

Ordinarily, the bill would be somewhat of a toothless bull dog standing guard over the family possessions. It is permissive only, but the heat which can build up on USDA during a campaign year makes the old house pet an extremely dangerous animal if dosed up with political vitamins. There is no reason to believe there will be a White House veto.

This bill was started some weeks ago when there was evidence of substantial drouth conditions in South Dakota and in southwestern Minnesota. But this week's crop report casts some doubt on any over-all need. It says South Dakota is holding fast at the same corn crop level of production as a month earlier, although substantially below the 10-year average.

USDA officials say they are getting county reports from South Dakota and southwestern Minnesota that local farmers are unable to obtain corn and are insisting that corn be made available from CCC bin sites.

If the President signs this bill, it can be expected there will be at least token offerings of CCC bin site stocks of feed grains at price support levels. And it is probable that USDA would price such grains at the bin site plus delivery charges or back off the local market price from the nearest terminal market. For South Dakota relief, it is likely that USDA would price its bin site sales on the basis of freight off Minneapolis—if no market price developed better than the support price level.



VITAMIN A PRODUCT—Merck & Co. is introducing a new vitamin A product, Stabimix. Shown at the top is a magnification of vitamin A palmitate crystals. The rounded, beadlet form of the new product is shown below.

Merck Introduces Vitamin A Product In Five Potencies

RAHWAY, N.J.—A new family of stabilized vitamin products designed specifically for use in poultry and animal feeds will be introduced this month by Merck Chemical Division under the trade name, "Stabimix." First in the series is Stabimix A, a dry, stabilized vitamin A palmitate.

James E. McCabe, director of marketing for agricultural products at Merck, said the new form of vitamin A will be available in five potencies, blended with suitable diluents.

Merck's dry vitamin A augments a variety of vitamins produced by the company, which is also basic in B complex vitamins for feed use, Mr. McCabe noted.

Stabimix A is stable even when in direct contact with mineral-vitamin antibiotic mixtures normally added to animal and poultry feeds and it is also stable under normal feed manufacturing conditions, storage and handling, the company said.

It will be marketed in potencies of 10,000, 20,000, 30,000, 250,000, and 325,000 U.S.P. units per gram. The two lower potencies will be available in 10-lb. fiber drums, the three higher potencies in both 50-lb. and 100-lb. fiber drums. The preparation will be priced competitively with all dry forms of vitamin A on the market today, Merck said.

The company described the product as "a free-flowing, hard, brownish tan beadlet prepared from stabilized synthetic vitamin A in a complex gelatin type base." The beadlets have irregular, rough outer surfaces which help disperse and keep each beadlet uniformly distributed in the finished feed, according to company data.

The beadlets are said to be capable of withstanding high pressures of pelleting operations.

"This form of vitamin A was found to be two to eight times as stable as fish oil in animal feeds at ordinary temperatures," the company said. "Stabimix is rapidly absorbed in the bloodstream, an important point where high blood levels of vitamin A are needed for the health or physical well-being of an animal."

MILL INCORPORATES

WILLIAMS, CAL.—The Endeman Feed & Pellet Mill Co. has been incorporated here to supply various kinds of equipment for animal feed producers.

No Action Reported On N.C. Egg Plan

By Special Correspondent

Reported plans of North Carolina feed millers to establish a non-profit commercial egg marketing program to meet possible competition from large-scale contract programs have not reached a "positive action" stage as yet, reliable sources report.

The local mills' plans, first reported by a poultry publication (Feedstuffs, Sept. 5, page 2), were generated by efforts of a large feed manufacturing concern to establish a "million hen" operation, according to North Carolina sources.

A spokesman for one country group said the large feed company had been holding organizational meetings for several months, but as far as could be determined, no hens had been placed.

He added that he doubted very much whether the combined efforts of local feed people could "stem the tide of such a program any more so than a person could combat a hurricane with a ping pong paddle."

Another source commented that there is a growing opposition to highly integrated poultry operations in this area, and efforts to establish a large-scale egg program would likely meet with coolness on the part of local farmers who could be a part of it. Local producers, he said, have well-established markets for commercial eggs both within and outside the Carolinas and any "outsider" would have to have his own markets for eggs produced in the Carolinas.

Ralston Purina Names Regional Ad Managers

ST. LOUIS—Three members of the Ralston Purina Co. feed advertising department, St. Louis, have been named regional advertising managers, according to an announcement by J. E. Streetman, marketing vice president.

Omer Dye is eastern region advertising manager and will headquarter at the company's regional sales office in Alexandria, Va. Lloyd F. Clay is southern region advertising manager and will headquarter in the regional offices at Atlanta. B. C. Brown is grainbelt region advertising manager and will continue to headquarter in the company's general offices in St. Louis. C. J. Frazier continues as western region advertising manager, headquartering at Kansas City.

All the new regional advertising managers will continue to report to Maury Malin, director of feed advertising. Mr. Malin announced that these changes were made "in order to tailor Purina advertising to regional variations in agriculture and to tie in advertising more closely with regional sales programs."

Armour Sales Staff Changes Announced

CHICAGO—Two appointments and one retirement have been announced in the by-product sales division of Armour & Co.

R. W. Guenther has been named manager of the animal feed sales department. He has been with Armour since 1929.

C. F. Gabel has been appointed manager of the tallow and grease sales department to replace M. P. Pruyn, who is retiring after 35 years of service with the company. Mr. Gabel joined Armour in 1920.

Midwest Accounts for Turkey Gain

WASHINGTON—Led by Minnesota—now the leading turkey state—the Midwest this year is assuming a still greater role in over-all turkey production. In fact, the north central states will account for just about half of the 1959 turkey crop.

This is shown in an examination of state and regional figures in the U.S. Department of Agriculture's preliminary report on the 1959 turkey crop. Producers are raising some 82 million turkeys this year, the report shows. (Feedstuffs, Sept. 5.) This is a new high in turkey numbers. However, because more of the turkeys are lightweight birds, total tonnage may be down.

Minnesota growers this year are producing nearly 13.5 million turkeys of all breeds, which puts this midwestern state in first place among the states. The former leader, California, has an estimated total of 12.8 million. Minnesota production is up 28% from a year earlier, while California's is off 4%.

Among the various regions in the USDA reports, all showed decreases this year except the east north central states, up 6%, and the west north central states, up 20%. Wisconsin, with a sharp increase of 41%, accounted for the increase in the east north central states. Other states in that section showed at least some decrease. Several states in the west north central region, including Iowa as well as Minnesota, showed marked percentage gains over 1958.

While total turkey numbers are down (because of heavy breed decreases) in most states and regions outside of the Midwest, nearly all sections showed increases in light breed birds.

(For details on state and regional turkey production, with comparisons, see table in Sept. 5 Feedstuffs.)

Lower Oilseed Meal Prices at Memphis

MEMPHIS, TENN.—Prices of oilseed meal futures were mostly lower on the Memphis Board of Trade during the past week, compared with one week earlier.

This was due to a reflection of slow cash oilseed meal business and good condition of the crops.

Prices generally tended to mark time during the week, shortened by the Labor Day holiday, with the current September unrestricted soybean oil meal contract the only gainer. It eased up slightly on a modest amount of trade buying in the nature of hedge lifting.

New crop months were under pressure from speculative interests, influenced by easiness part of the week in the soybean market.

A small amount of hedge selling developed in bulk solvent cottonseed oil meal. Most of the trade remained on the sidelines, however, pending more definite knowledge of the crop-outturn. Prices eased Sept. 8, when the U.S. Department of Agriculture estimated the cotton crop at 14,678,000 bales of 500 lb. gross weight.

Inauguration of trading in the Memphis basis soybean oil meal market received favorable public response, with encouraging interest displayed by the trade.

Memphis basis soybean oil meal closed Sept. 8 unchanged to 50¢ ton lower than on Sept. 1, unrestricted soybean oil meal 15¢ lower to 25¢ higher and bulk solvent cottonseed oil meal unchanged to $1 lower.

Traded during the period were 500 tons of Memphis basis soybean oil meal, 2,800 tons of unrestricted soybean oil meal and 1,100 tons of bulk solvent cottonseed oil meal.

Delmarva Broiler Prices Drop Again

SALISBURY, MD.—Broiler prices in Delmarva slid down just a little more last week. The average price paid on the farm was 16.15¢ lb. The price the week before was 16.37¢.

Although too low for many growers to realize any profit, and more often selling at a loss, the price was good considering the abundant supply.

Marketings last week in Delmarva totaled 3,900,000 broilers, 3% less than the corresponding week of 1958. The average price a year ago was 16.39¢.

There is considerable lack of enthusiasm across the nation among hatcherymen. In 22 reporting states, 34,130,000 eggs were set last week, slightly less than the previous week and 8% less than the corresponding week a year ago.

Settings were down from the previous week in 16 of the 22 states with sharpest declines reported in Alabama, Indiana, Arkansas and Pennsylvania.

Broiler chick placements traced a similar pattern of gloom. Placements in the 22 important broiler states totaled 26,939,000 chicks, 5% below the previous week and 4% below the corresponding week a year ago. Decreases were reported for 15 states and increases in 7 states, compared to the previous week. The largest decreases from the previous week occurred in Georgia, Delaware, Alabama and Mississippi.

GRAIN FIRM OPENS

FRESNO, CAL.—A branch of the Advance Seed & Grain Co. of Arizona was opened here recently. Donald D. DeClusin is an agent for the Fresno branch.

Tastelation® ANISE PRODUCTS... LOWEST COST!
Anise compounds—Anise Oil USP—Anethole USP
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SLASHES FEED COSTS TO THE BONE. RUNS BY TRACTOR P. T. O. OR ELECTRIC MOTOR. Banishes guesswork and uncertainty in feeds and feeding. Granulates all materials without flouring, the modern way. May also be had with Krimper-Kracker Grain Roller.
NEW! STATIONARY OR PORTABLE LOW-COST SELF-CONTAINED FEED PLANT
A unique consolidation of two famous feed processing units, Davis Feed Mixer and Davis Feed Granulator. A TRUE PROFESSIONAL INSTRUMENT FOR ONLY $1225.00.
Capacity 2 tons hourly. Other sizes handle largest requirements.
DISCHARGES ON FLOOR OR INTO ELEVATOR
100% Precision Batch Mixing on hay, cobs, ear corn, grains, LIQUID MOLASSES, FISH OILS, AUREOMYCIN, supplements, concentrates or any fortifier.
WRITE FOR LARGE FREE CATALOG ON Davis 65th Anniversary Milling Equipment
DAVIS MFG. CO., INC., Dept. LO-181 PONNER SPRINGS, KANSAS Established 1894

Congressional Unit Completes Work on PL 480 Extension

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — A congressional conference committee completed its work on legislation to extend Public Law 480 this week. This committee agreement now goes to the two chambers for approval—which is indicated.

Basically, Congress would extend the surplus disposal law for a two-year period authorizing distribution of surplus commodities at the rate of $1.5 billion annually. It also provides an annual authorization of $300 million for aid or donations to meet emergencies in foreign nations.

For the feed industry and oilseed crushers, this extension legislation poses some new aspects of marketing for edible oils, lard and with a concomitant effect on the oilseed meals.

Provisions

First, the amended law provides that edible oils and lard shall be made available for distribution through voluntary relief organizations for domestic distribution to needy persons in chronic unemployment areas to the extent practicable as determined by the Secretary of Agriculture. This proposal was added to the legislation by Sen. John Sherman Cooper (R., Ky.), but as introduced it would have required on a manadtory basis that when USDA declared any farm commodity in surplus, it would first be required to make such supplies available for domestic relief donation. This broad proposition aroused opposition at USDA on the grounds that it would add poultry, fruits and many other commodities to a list of domestic donation programs—even if as in the case of poultry PL 480 authorizations have been okayed for market development programs in foreign nations—and would automatically open up every domestic relief area as a priority customer. As approved by the committee, the original Cooper provision has been watered down by qualifying language which limits such domestic donations to the extent that U.S. Department of Agriculture deems practicable.

Donation Program

Another donation program confined exclusively to edible oils and animal fats is contained in the conference committee measure. It too is a modified version of the original proposal for foreign aid distribution. In approving the amendment—which is permissive rather than mandatory—the committee qualified the original by stating that in carrying out such procurement of surplus commodities, USDA should make such open market procurement of consumer end products as to tend to maintain basic prices for such commodities as soybeans, cottonseed and flaxseed at levels which would discourage accumulation in CCC stockpiles.

Originally the proposal would have required USDA to make purchases of those commodities "to maintain" price levels above existing price support program loan levels.

FATS AND OIL PROGRAM BELIEVED CERTAIN

★

WASHINGTON—Informed sources close to inner circles of the U.S. Department of Agriculture say that as a result of pending legislation extending Public Law 480 it now is evident that a domestic fats and oil donation program must be seen as a certainty. And there is a strong probability that subsequently the government will have to undertake a similar oil donation program in the foreign relief aid field.

Data Shows Egg Laying Flock Could Be Smallest in Years

WASHINGTON—Figures released this week by the U.S. Department of Agriculture indicate that come January the nation's egg laying flock may be the smallest in some years. The USDA estimate puts the number of potential layers on farms Sept. 1 at 413 million—5% less than a year earlier and less than at the same point of any year since estimates were started in 1937.

Regionally, the greatest decreases in potential layers (hens and pullets of laying age plus pullets not of laying age) were in the west north central and the south Atlantic states—both down 10% compared with Sept. 1, 1958, counts. Decreases for other regions were: East north central, 8%; north Atlantic, 6% and south central, 4%. In the West there was no change.

USDA said that on Sept. 1 about 31% of the potential layers were not of laying age. Last year, at the same time, the percentage was 34.

In mid-August, producers' egg prices were slightly better than a month earlier, but still well below those of a year earlier. Producers received an average of 39.9¢ doz. midway through August. A month earlier the price was 30.2¢. And a year earlier producers were paid 37.7¢.

Egg prices were affected by continued hot weather, which put poor quality eggs on the market. Top quality eggs brought substantial premiums.

There were fewer layers in production during August—an average of 281,219,000, compared with 284,457,000 a year earlier—but this 1% cut was offset by a slightly higher rate of egg production per layer.

Farm flocks laid 4,731 million eggs during August—1% more than in the same month a year earlier. Greatest increases were in the south Atlantic states and in the West. The rate of egg production per layer during August was 16.8, compared with 16.5 eggs in August, 1958.

Hens and Pullets of Laying Age, Pullets Not of Laying Age, and Potential Layers on Farms, Sept. 1

Year—	North Atlantic	E. North Central	W. North Central	South Atlantic	South Central	Western	United States
Hens and Pullets of Laying Age on Farms (thousands)							
1948-57 (average)	51,648	54,130	73,670	28,805	46,803	32,402	287,467
1958	51,904	56,403	72,136	30,576	41,479	36,162	288,660
1959	49,723	53,221	70,789	33,129	41,117	37,943	285,922
Pullets Not of Laying Age on Farms (thousands)							
1948-57 (average)	27,948	39,181	66,811	16,062	26,158	14,772	190,131
1958	21,102	29,084	53,668	13,746	16,868	11,296	145,764
1959	18,763	25,814	42,032	15,543	14,976	9,636	126,764
Potential Layers on Farms* (thousands)							
1948-57 (average)	79,596	93,311	139,689	44,867	72,961	47,174	477,598
1958	73,006	85,487	125,804	44,322	58,347	47,458	434,424
1959	68,486	79,035	112,821	48,672	56,093	47,579	412,686

*Hens and pullets of laying age plus pullets not of laying age.

Roger Toussaint Joins Hales & Hunter Firm

CHICAGO—Roger S. Toussaint has been appointed manager of marketing research by Orvel H. Cockrel, marketing manager, Hales & Hunter Co.

R. S. Toussaint

Mr. Toussaint has been market analyst for the past 13 years in the commercial research department of Swift & Co.

He received his master's degree in agricultural economics at Iowa State University.

Workers' Pay Rises

SAN FRANCISCO — Production workers in grain mills in California increased their average weekly earnings from $101.11 to $103.25 between June and July of this year, according to estimates prepared by the division of labor statistics and research of the California State Department of Industrial Relations. The figures compared with $99.36 for July of 1958.

The average hourly earnings rose fractionally from $2.46 in June to $2.47 in July, and were at $2.36 the previous July. The estimated number of hours per average production worker were, in the same order, 41.1 hours, 41.8, and 42.1.

NEW PLANT OPENED

EVANSVILLE, IND.—The Vanderburgh County Farm Bureau Cooperative Assn. is opening its new plant here, according to Joe Wallace, manager. The plant, which represents an investment of about $500,000, includes a feed mill, fertilizer warehouse, office area for the Cooperative & Farm Bureau Insurance Co. and a hatchery with a 70,000-chick capacity. A gasoline bulk plant also is located on the property.

Integrated Broiler Business Purchased

SAN ANGELO, TEXAS—What is described as the largest integrated broiler business in west Texas has changed hands. Paymaster Feed Mills, a division of Anderson, Clayton & Co., Inc., has bought the poultry, feed and processing interests of Marion Balch, who started growing broilers several years ago.

Mr. Balch reportedly sold his Angelo Feed & Supply Co., the B & B Produce Co. and 20 pieces of rolling stock. Also included in the purchase were three broiler growing farms, two leased farms, approximately 100,000 birds on feed, 200,000 others being grown on contract, 40,000 laying hens, poultry equipment and the firm's distribution center in El Paso.

Mr. Balch explained that he had gone as far as he could go alone with the business he had developed from a drouth-ridden feed store back in 1951. "A company with capital and research was needed to make further necessary expansion," he said.

Paymaster, which has been active in the Southwest, is making its first step into poultry integration. Paymaster announced that it will try to increase the number of broilers produced to approximately 5 million annually, and will stress the growing of turkeys and laying hens.

Mr. Balch will remain with the firm as general manager and most of the other employees will be retained.

W. A. Williams, general manager of Paymaster Mills at Abilene, Texas, said the company hopes to increase its processing plant's output to keep pace with the proposed increase in broiler production. Processing 4-5 million chickens would be double last year's production, which included the handling of a million locally produced birds and a like number of birds shipped in from east Texas.

In its search for new contract broiler producers, Paymaster is looking for farmers who will grow as many as 10,000 birds at a time.

Cornell Program To Present New Research Advances

BUFFALO—Some of the most recent developments in nutrition research and their applications in livestock and poultry feeding will be discussed during the Cornell Nutrition Conference for Feed Manufacturers at the Hotel Statler in Buffalo.

The conference, sponsored by Cornell University of Ithaca, N.Y., in cooperation with the American Feed Manufacturers Assn., will take place Nov. 11-13. Registration will be Wednesday evening, Nov. 11, and the speaking program will be presented on Nov. 12-13.

In addition to the research presentations by Cornell scientists, there will be talks by guest speakers from industry, government and experiment stations.

The nutrition papers will cover many aspects of livestock and poultry feeding. Among the subjects will be such things as restricted feeding of pullets, swine feeding, new findings in ruminant nutrition, recent fats and oils work, tranquilizers, additives in ruminant rations, taste research, new vitamin, amino acid and mineral work with swine and poultry and various aspects of dairy feeding. Other topics also will be discussed.

The opening session will include a number of talks of general interest.

I. S. Riggs, vice president, the Quaker Oats Co., Chicago, and chairman of the board, American Feed Manufacturers Assn., will present comments on the question, "Who is going to 'farm' the farmer?" The role of the agricultural college in modern agriculture will be discussed by Dr. C. E. Palm, dean of Cornell's College of Agriculture. Dr. C. G. Durbin, Food and Drug Administration, will discuss federal control of feed additives. A look at the feed-livestock picture for the year ahead will be provided by Dr. L. C. Cunningham, Cornell economist.

One of the guest speakers will be Hjalmar Clausen, State Animal Husbandry Experiment Station of Denmark, whose topic will be "Feeding of Swine for the Production of Pork." Dr. Gennard Matrone of North Carolina State College will discuss studies of sodium and potassium cations in volatile fatty acid metabolism of ruminants. Another guest speaker, C. A. Denton of the U.S. Department of Agriculture will present a paper on the role of fats and oils in chick nutrition.

Papers by Cornell staff members on Nov. 12 will include the following: "Observations on Restricted Feeding of Growing Pullets," Dr. J. H. Bruckner and Dr. F. W. Hill; "Plane of Nutrition and Livestock Performance," Dr. J. T. Reid; "Studies on Feeding for Leaner Ducks," Dr. M. L. Scott, Dr. R. C. Baker and Dr. E. Dougherty; "Roughage Intake and Efficiency of Feed Utilization in Dairy Cattle," Dr. J. B. Stone, Dr. G. W. Trimberger, Dr. C. R. Henderson, Dr. J. T. Reid, Dr. K. L. Turk and Dr. J. K. Loosli; "The Role of Fatty Acids and Other

(Turn to CORNELL PROGRAM, page 132)

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Feed Industry Problem in Obtaining Covered Hopper Cars Discussed

By Special Correspondent

EDITOR'S NOTE: The following story, from a meeting held this summer in Milwaukee, was prepared by a special correspondent and was based on a transcript of the meeting's proceedings.

MILWAUKEE—The atmosphere got a bit warm at a summer meeting of the Midwest Shippers Advisory Board when the subject of covered hopper cars for use by feed manufacturers entered the discussion of the general car shortage situation.

Responding to the chairman's invitation for "other comment," A. E. Leitherer, Allied Mills, Inc., Chicago, made an appeal for "a change in the distribution pattern" followed by the railroads with respect to this type of car.

"It seems to me," said Mr. Leitherer, "that there is either a feast or a famine of covered hopper cars. We are having great difficulty in obtaining them because of the use of this equipment, primarily, in the service of the cement people. I believe the carriers can certainly consider the needs of the feed industry for this particular kind of equipment."

Later R. E. Clark, chairman of the car service division of the Association of American Railroads, reported on "A Rail Transportation System Adequate to Our Needs." In the course of his remarks he referred back to Mr. Leitherer's reference to the covered hopper situation and continued:

"The loadings of covered hoppers in the first half of this year were 25 percent higher than they were in the same period last year, when the loadings of covered hopper cars exceeded any year of record.

"We are now loading somewhat over 100 different commodities in the covered hopper cars, and to indicate the awareness of the railroad industry to the needs of the shipping public we have, since 1950, added about 40,000 covered hopper cars to the fleet.

"The present covered hopper ownership is just a few cars under 60,000, while in 1950 the ownership was only 19,500 cars."

Net Increase

Mr. Leitherer rose to ask if the increase of 40,000 covered hopper cars since 1950 represented new cars or replacements.

"We have had a net increase of 40,000 in the covered hopper fleet since 1950," Mr. Clark replied.

"How many covered hopper cars were retired in this period? Also, how many were renovated coal cars?" Mr. Leitherer asked.

"First of all," said Mr. Clark, "there are no renovated coal cars in this figure. The 40,000 figure is a net increase in the ownership. As you may know, the covered hopper fleet is comparatively new, so retirements have been negligible. Retirements and cars destroyed never exceed more than a couple of hundred in any one year."

"That brings me to my next question," said Mr. Leitherer," and that is what thought has been given to greater utility of this equipment in joint line service? I believe that is where some of the shortages we have experienced come about. I am also aware of the trend in the cement industry to go to truck hauling, which should release cars. Still, we do sometimes experience difficulty in obtaining sufficient equipment for our needs."

Distribution of covered hopper cars among shippers, Mr. Clark explained, is the responsibility of the railroads serving individual shippers and it is their obligation to distribute cars equitably among shippers on each line. The car service division of the AAR comes in, he said, when a surplus, "or a so-called reasonable surplus," develops. In that case the car service division will direct the movement of the surplus to another area in need of cars, he said.

"I personally know of no restrictions on use of the covered hopper car in interline service," Mr. Clark asserted, "although we do know there are certain cars in assigned service for the handling of one commodity or another."

Restriction Cited

"Well," said Mr. Leitherer, "I am sorry that I have to differ with you, but there is definitely one restriction. We have cars now but it is only through the goodness of heart of the Union Pacific. We are able to use these from plants shipping alfalfa meal for feed in bulk to some other destination on a foreign line. Then we have to route this car back to the owner.

"We realize there is a tightness occasionally, but we do have that difficulty. We have that same difficulty with the Wabash Railroad, the Missouri Pacific, the New York Central. I can name a score of other roads that will not let us take these cars for movement beyond their lines, and that greatly restricts the flexibility of this type of equipment in our operations.

"This is one of the reasons that the feed industry is going to trucks for handling bulk lots."

The covered hopper car, Mr. Clark said, cannot be considered a general service car, like a boxcar and, because of the varied commodities now loading in them, there must be some restriction. He admitted that he was aware of certain instances such as Mr. Leitherer had mentioned.

"It's not practical," he said, "to load dolomite in a covered hopper car today, cement tomorrow and soybeans the next day. The cars would have to be cleaned after each trip, which would not only be costly but would also take them out of service. But I understand that your question had to do with the interline movement of these cars."

"Well, this is assigned service," said Mr. Leitherer. 'These particular covered hopper cars are not going into any other type of hauling. They are in our own service completely. We load alfalfa meal in one instance, soybean meal in another, or we may load grits or hominy and then feed.

"It is all a related commodity, requiring no additional handling and it would seem there could be an assigned service with us, so, if we had need at another point, we could create our own car pool arrangement.

"It would seem to me we should have that flexibility and the railroads would gain by permitting their cars to be used this way. It would not be taking anything out of service for revenue purposes, because we do have some cars we can release when needed for their feed service. It is a matter of flexibility to keep up with distribution demands. It is difficult to under-

BERMUDA HOLIDAY—A Bermuda holiday for 80 Pillsbury dealers and salesmen was climaxed when Clarence Stouffer, owner-manager of Stouffer's Hatchery at Waddams Grove, Ill., found the buried treasure on an island off Bermuda. The New York-Bermuda trip ended a sales campaign and paid off in an all-expense trip for those who showed the greatest tonnage increase over the previous year. Shown above is Mr. Stouffer receiving his additional "loot" from J. K. Hubbard, director of marketing for the feed division of the Pillsbury Co., Clinton, Iowa.

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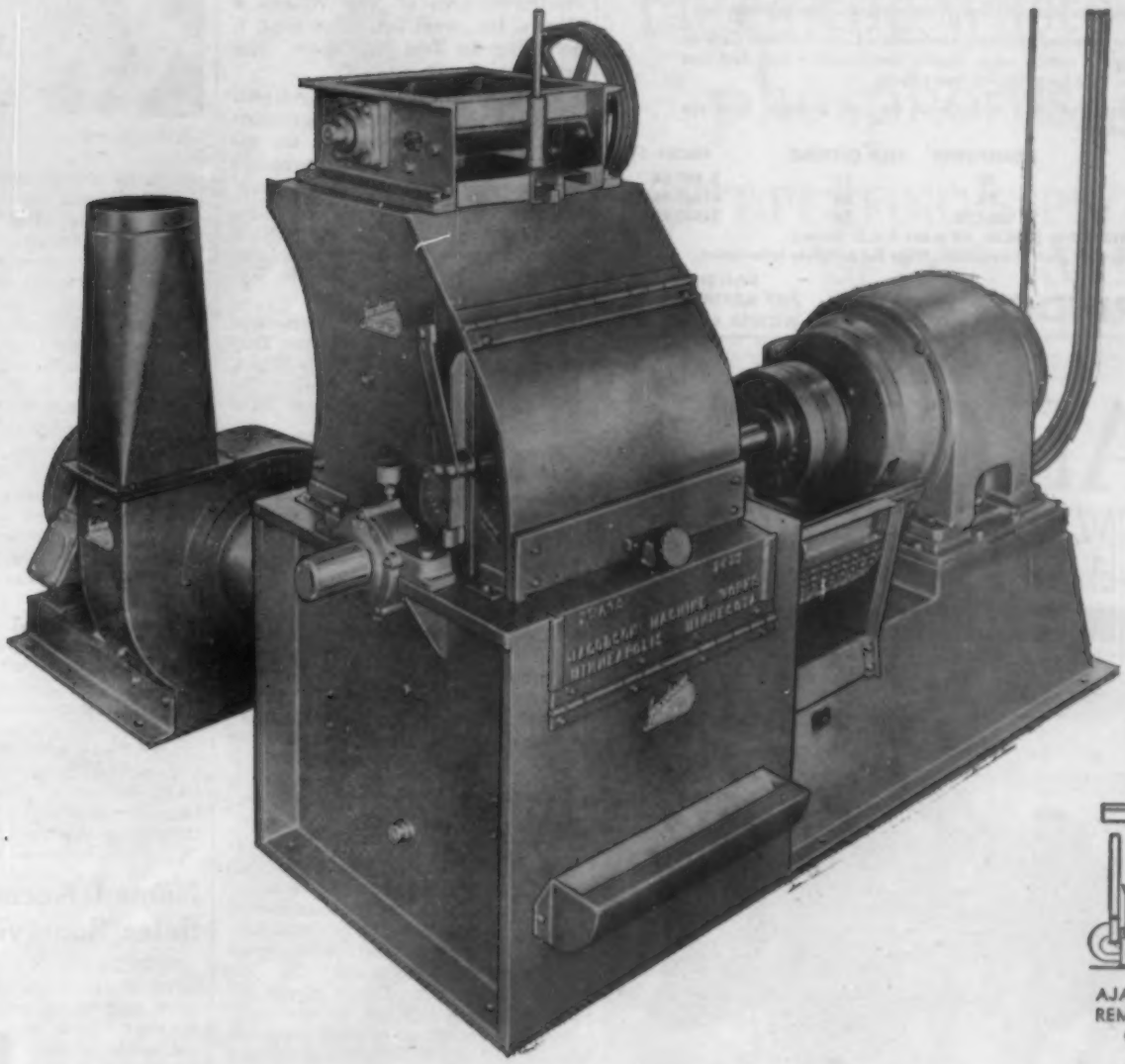

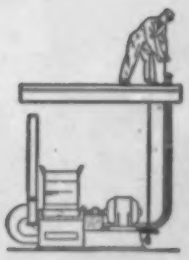

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Van Waters & Rogers Announces Changes

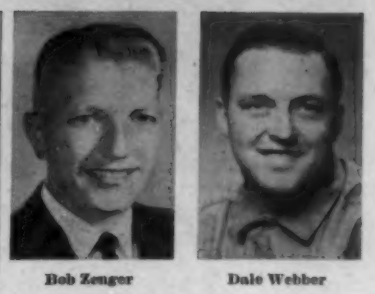
SEATTLE, WASH.—Six transfers and appointments in the Pacific Northwest area of Van Waters & Rogers, Inc., went into effect Sept. 1, according to Tom W. Moore, vice president.

Willis Ryder, who has represented the firm's agricultural supply department in central Washington for the past three years, was transferred to the company's San Francisco office.

Bill Crutcher, Spokane salesman, will cover the Columbia Basin area and north into Wenatchee and Lake Chelan, formerly a part of Mr. Ryder's territory.

Franz Sunitsch, newly appointed Seattle salesman, will cover the Yakima Valley area and the Walla Walla, Pendleton and Hermiston sales district formerly serviced by Dale Webber of the Portland office.

Dale Webber has been transferred to the company's Boise office to cover the Boise Valley area and parts of eastern Oregon.



Bob Zenger | Dale Webber

The Seattle office will also turn over the Goldendale area of south central Washington to Portland. It will be added to the territory covered by Bob Zenger.

Eugene W. Ogle was appointed Spokane manager for the agricultural supply department.

Van Waters & Rogers, Inc., distributes agricultural chemicals, fertilizers, feed additives, animal health products, binder and baler twine and wire.

stand why the carriers will take cars away from themselves by this type of restriction, when the cars are assigned to us in the first place."

Freight Rates

At this point Lawrence Farlow, secretary of the Farmers Grain Dealers Assn., Bloomington, Ill., raised another question. He couldn't understand, he declared, why the railroads would publish a reduced tariff rate per hundred pounds, but, to avoid a reduction in income, set minimums that are difficult to meet.

"We find," he elaborated, "that recently the rails have reduced their rates and published minimum loads of 110,000 lb. or an absolute minimum of 100,000 lb. And yet, only about 50% of their equipment is capable of accommodating that size load.

"We know of instances where the railroads have suffered the loss of car days by placing at country elevators boxcars of 80,000 lb. capacity when a 100,000 capacity car is needed to meet the requirements of the tariff. We feel there must be more cooperation between the traffic and operating people in making tariffs, to enable them to properly utilize their equipment."

Following this digression the discussion got back to covered hopper cars. John J. Zurick, Central Commercial Co., Chicago, wanted to know if the carriers, because of one-way haul, are dissatisfied with the revenue from the covered hopper movement.

"Not to my knowledge, sir," Mr. Clark responded. And another railroad spokesman added: "Naturally, we would like to have more of these cars, but we first have to look in the till, to see if there is sufficient money to buy enough of them. We appreciate the one-way haul, too, although if we could figure out return trips for each hopper, the demand for them would not be so great."

"I thought that was the reason why the railroads do not have a complete fleet of covered hoppers," Mr. Zurick came back. "But I have another question. Why is it that the railroads seem to take their covered hoppers out of other services when the cement industry needs them? That is a reasonably seasonal movement. But they seem to take the cars from the grain shippers, or, in my case, the crushed rock business, to favor the cement people. I recently had 30 cars taken away from me for that reason."

Homer Wilson, Illinois Central Railroad, intervened to agree that it might happen in some instances, but he declared he hadn't seen too much of it.

"Generally speaking," said Mr. Wilson, "the railroads hesitate to take a car from an alfalfa mill and put it into cement service. They are reluctant to do it, but, after all, the carriers have the problem of car supply for their requirements."

Named Keenco Sales Supervisor

VINELAND, N.J. — The appointment of Gil Eddy as supervisor of sales and sales promotion for the Keenco line of automatic poultry equipment in New York and the New England states has been announced by Everett M. Keen, president. The firm operates two plants, one in Vineland and one in Emporia, Va.

Gil Eddy

Mr. Eddy has been associated with various phases of poultry production from the beginning of his business career. He is currently the New York state chairman of the Poultry & Egg National Board, and is also on the membership committee of the Northeastern Poultry Producers Council.

During his career he has worked for Dr. Salsbury's Laboratories, Charles City, Iowa, and the Automatic Poultry Feeder Co., Zeeland, Mich.

JOINS SALES CLUB

LOS ANGELES—Joseph E. Burger, director of public relations, H. V. Nootbaar & Co., was elected a member of the Los Angeles Sales Executives Club, according to a recent announcement by Norman L. Hess, president. More than 600 southern California sales leaders belong to the club.

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Need for Marketing Eggs in New Forms Stressed at Georgia Institute

By DEWEY McNIECE
Georgia Extension Poultryman

EATONTON, GA.—You can't find out what new products the consumers want because they don't know what they want.

This was expressed by Mahlon C. Sweet, editor, Poultry Processing & Marketing, at the fourth annual Georgia Poultry Institute at Eatonton, Aug. 24-27. Contract farming, management, feeding and auctions were among other subjects discussed.

Mr. Sweet said people do not use eggs because of inconvenience and lack of variety. Eggs should be offered in many different forms because they are competing with about 5,000 items on the grocery store shelf today, compared with 1,000 items in pre-war days.

He mentioned several companies that have introduced new products, and by so doing get more shelf space in the grocery store than eggs. Some of the new products he mentioned that might have possibilities were egg snacks, egg bars, brown and serve eggs, egg coated cereals, egg solids and individual packages of fresh or frozen eggs. Mr. Sweet brought out the opinion that large food companies might be the logical companies to introduce new egg products. He said it is estimated that it costs about $1 million to introduce one new product.

Contract Farming

Dewey McNiece, extension poultryman, University of Georgia, told the group that contract egg farming does not offer any overall advantages over the independent producer. The possible gains through quantity buying would probably be more than offset by management that isn't up to par, Mr. McNiece explained. Marketing might be one phase where a large contract egg program would have an advantage. This would not hold true if the independent producer operates in a systematic, orderly fashion, he said.

Dr. T. M. Goldhaft, general manager, Vineland (New Jersey) Poultry Laboratory, discussed vaccinating for laryngotracheitis. He stated that in his experience the brush method of applying the vaccine to the vent was better than the vent-drop method. Permanent immunity takes place if the birds are vaccinated after they are 4 weeks old. The disease spreads slowly and birds can be vaccinated to stop the spread of the disease. Hens in production can be vaccinated for laryngotracheitis without affecting the eggs produced any more than just handling affects the flock, he said.

At the Crossroads

Harold J. O'Connell, president, June Dairy Products Co., Miami, Fla., told the group that Georgia had made tremendous progress in commercial market egg production. He said producers are now at the crossroads where they must realize that many of their eggs will have to be exported to the large markets in the East. He said initially the eggs shipped out of Georgia are of high quality, but egg processors must use proven methods so that they do not run into any trouble. Because Georgia eggs were of poor quality several years ago, he recommended that they be shipped in plain cases for a while until they build up the reputation in the markets.

Mr. O'Connell said washing eggs causes the most trouble, followed by cracks. He suggested eggs should be segregated and so designated, and only the dirty eggs should be washed. He emphasized the need for using new containers, cooling the eggs rapidly and keeping them under refrigeration on the farm, as well as while being transported.

Breeding

Andy J. Wyatt, geneticist, Ghostley's Poultry Farm, Anoka, Minn., said the breeder's primary objective is to produce a chick that will produce the most profit for the poultryman. He stated that what the breeder does depends on the market demand. There are many traits the producer must attempt to improve, but he will put the most selection pressure on the trait that the chick buyer demands improvement in. He mentioned that many times there is a negative relationship in improving certain traits. Egg numbers and thickness of shell, as well as egg number and albumen quality, seem to fall in the category.

Wheeler McMillen, vice president, Farm Journal, Inc., Philadelphia, Pa., gave six possibilities as to who might control farming. He listed communistic gangsters, organized labor, federal government, business as distinguished from agriculture, farm organizations and small independents.

Mr. McMillen stated that we don't want 100% of either, but that a combination of two or three of the better ones is needed. He said the country is old enough to show that independent producers are among the most efficient in the world, but not old enough to prove this system will continue to be one of the most efficient.

Management

E. O. Creel, poultry management division, Alabama Flour Mills, Decatur, Ala., discussed business management in egg farming. He listed the following qualifications of a good manager: Poultry knowledge, balanced judgment, experience, cooperative, progressive, dependable, honest and a liking for chickens. Mr. Creel said a poultryman must know what the cost should be and what the costs are, and that it is impossible to know either without proper records and standards. The operating procedure for a poultryman is to make a survey of egg farming program, analyze the

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survey, list items that need attention, make a schedule for correcting these items, establish records to properly reflect costs, analyze records regularly and give attention to details, proper supervision and follow-through.

He said the cost of producing a 20-week-old pullet is $1.40 if mortality is zero. Five percent mortality and culling would raise the cost to $1.47. He said 10% mortality and culling would increase the cost to $1.55, and 15% mortality and culling to $1.64.

He gave the cost of producing a dozen eggs as 29¢, and listed production, feed wastage, mortality and culls, egg breakage and labor as important factors affecting costs in the laying house.

A panel on egg quality, moderated by R. A. Gayvert, agreed that AA quality eggs are not practical to merchandise at the present time, but should be kept as a challenge. The group agreed that washing is seldom done properly and that most of the poultrymen could reduce breakage and the amount of cleaning necessary if they would change from community to individual type nests.

J. O. Sprowles, manager, Douglas Fresh Egg Co., Douglas, Ga., stated that from his experience it is easier to control quality under contract egg farming than otherwise. He said that the size of laying flock might also be a very important factor.

Jimmy Hancock, president, Hancock Farms, Inc., Kennesaw, Ga., said large independent producers can control quality as well as, or better than, those under contract.

Sedative

Dr. Kenneth May, poultry products technologist, poultry division, University of Georgia, discussed using sedatives in catching, handling and processing poultry. He said that the sedative that they were using remained in the tissues, and that the Pure Food and Drug Act will not allow them to use it with broilers to be processed. There is a possibility a sedative could be used in controlling pigeons and other birds more easily than they are now, he said.

Breeder Males

K. K. Hale, executive vice president, Peterson Breeding Farm, Decatur, Ark., told the Georgia group that poor diet and management can easily be the cause of much of the performance of male birds.

He said the female is at fault in the reduction and fertility after several months of production, as well as the male. One theory is that the loss of feathers on the back can reduce mating. The toe nails on the male might be sharp and cut the backs of the hens. He stated that a micro-organism has been isolated that might have something to do with the fertility problem.

Mr. Hale said that the broiler industry demands a fast growth rate in the birds, but too much selection pressure can cause leg trouble and crooked toes.

Five recommendations in managing the breeder male he listed were: (1) Never overcrowd a breeding flock. (2) Do not restrict feeding until skeletal growth is reached. (3) Make certain there is a minimum of fighting when reaching puberty. (4) Make certain males do not get too fat after the first few months of production. Feed should be restricted if they overeat. (5) Do not feed a high protein diet.

Harry Tobey, coordinator, Martin Feed & Poultry Co., Gainesville, Ga., said that if we are to stay in the business we must improve management practices. He told the group that management was an all-inclusive term and refers to all acts that take place on the broiler farm.

R. M. Harris, secretary, J. D. Jewell, Inc., Gainesville, Ga., said 90% of the broilers sold at the present time are ice packed. This places poultry in a highly perishable position and at the mercy of the market, he said. At least half of the broilers should be merchandised to help stabilize the market, Mr. Harris suggested. This would allow the processor to hold birds for a considerable length of time and not be forced to sell.

A panel on the Georgia broiler auction, moderated by Milton Y. Dendy, extension poultryman, University of Georgia, agreed that one of the major contributions of the auction was to change the pricing structure from 1¢ up or down, to 1/10-¼¢.

The panel felt the auction makes the dealer more money. Since the beginning there has been a price difference of .446¢ in favor of the auction. When all the costs are subtracted, about .148¢ lb., the dealer still has .298¢ above the other pricing system.

Approximately 20% of the broilers sold in Georgia have been sold through the auction since its beginning. The dealer does not have to be present when his birds are sold because the auction acts as an agent and sells the birds. The dealer tells the auction the price he will take and the auction takes it from there.

Several advantages of a practical control feeding program for meat type breeders were given by Chester Pilch, Pilch's Breeding Farm, Hazardville, Conn.

He said egg production in his tests was the same, body weight was 1 lb. less, mortality was 7-9% less and 20-25% less feed was consumed. Mr. Pilch also outlined a program for feeding meat-type breeder pullets.

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Swine Production Increases Noted in Western New York

ITHACA, N.Y.—Increases in swine production in western New York as a result of more corn acreage are noted in a report from the agricultural economics department at Cornell University. The report also compares swine production in western New York with that of the Corn Belt.

"In most of the Corn Belt states where comparable data were available, feed made up from two thirds to three fourths of the costs in producing pork," according to the report. "New York differed most from the Corn Belt states in the percentage of the total costs made up by labor. Smaller enterprises and inefficient buildings and feeding arrangements were primarily responsible for the relatively high labor cost. This reduced feed cost proportionately in the breakdown of production costs."

"New York hog producers were less efficient on the average than those in the Corn Belt states when comparing pounds of feed used per 100 lb. of pork produced. The group studied in New York was not chosen from a selected list. One third of the group, however, had feeding efficiencies of 400 lb. per cwt. or less. All of this group made profits. Under most price relationships between corn and hogs in New York in the postwar years, these producers also would have made profits."

The report went on to say that hogs can be a profitable enterprise over a period of years on some farms in western New York. A farmer can expect to receive more than the market price for corn by feeding it to hogs, the report stated, if efficiency of 450 lb. of feed or less per 100 lb. of pork produced is maintained; a two-litter system with 10 or more sows is followed; price relationships between corn and hogs are as favorable as they were from 1946 to 1957 (the average corn-hog ratio was 12.4), and an average of eight or more pigs per litter are weaned.

It was noted that in 1958 New York ranked 31st among the 48 states in numbers of hogs on farms, and that hog production has been a declining industry over the last 50 years in most of the state.

The report was issued by Dr. B. F. Stanton and Donald S. Luce, department of agricultural economics.

FEED MAN ENCOURAGES INTEREST IN HORSES

KEENE, N.H.—The horse population in Cheshire County reportedly is increasing, and the trend is being encouraged by a local feed dealer. Robert Wheeler, Elm City Grain Co., who is also president of the Cheshire Fair Assn., was responsible for inaugurating a horse show, in addition to the regular events involving horses, at the annual fair at Keene Aug. 27-30. More than 300 horses participated in the fair, including horses of 4-H Club members, ponies in harness racing, pulling contests, the new horse show and a western show. There is still so much interest in horses in this area, according to Mr. Wheeler, that his feed establishment is meeting a growing demand for horse feeds, and also is stocking such equipment as snaps, buckles and other harness repair parts, curry combs, blankets, buckets and buggy whips. Customers go directly to the feed company's warehouse to purchase these items.

California Assn. Picks Convention Chairman

SACRAMENTO—Walter A. Blasingham, Pillsbury Co., Los Angeles, has been named general chairman for the California Hay, Grain & Feed Dealers Assn. 36th annual convention to be held at the Ambassador Hotel, Los Angeles, April 21-23, 1960, according to a recent announcement by Jack W. Flammer, president.

Arthur H. DeRaad, association vice president, named Winslow W. Hall, Pacific Molasses Co., San Francisco, to head the 1961 convention scheduled for April 20-22, 1961, at the Jack Tar Hotel, San Francisco.

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Canadian Poultry Numbers Decline

WINNIPEG — Total poultry on farms in Canada (excluding Newfoundland) at June 1 this year declined 1% to an estimated 81,655,000 birds from the estimated total of 82,624,000 on hand at the same date last year, according to a semi-annual survey of the Dominion Bureau of Statistics.

Total hens and chickens were estimated at 73,510,000 as of June 1 this year, down 3% from last year's June estimate of 75,730,000. The latest previous year-to-year June decrease was in 1955. While the total fell, the number of hens and pullets six months old and over, comprising the bulk of the layers, was 7% larger at an estimated 25,140,000 compared to 23,495,000. By provinces, the June estimate shows increases in totals only for Nova Scotia and British Columbia. In Ontario and Quebec there were decreases of 5% and 7%, respectively. Other decreases ranged from 4% to 1%, except for no change in Manitoba.

The number of turkeys showed an increase of 23% to 7,562,000 from 6,157,000 a year earlier, increases being reported for all provinces except Nova Scotia and New Brunswick. The estimated numbers of geese and ducks were both 3% lower, geese totalling 308,000 against 318,000 and ducks 405,000 against 419,000.

Canada Shipments Larger Than Last Year

WINNIPEG — Shipments of primary, secondary and all other animal feeds in Canada were each larger in June this year than last. Half-year totals for each were substantially above last year, according to the Dominion Bureau of Statistics.

June shipments (year earlier figures in parentheses) were: primary feeds, 33,343 tons (31,745); secondary feeds, 202,469 (195,360), and all other animal feeds, 44,428 (43,608).

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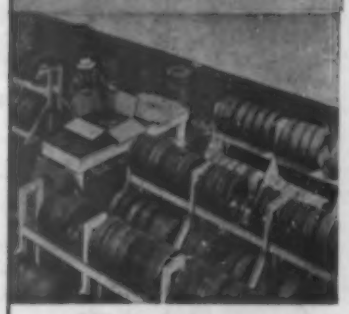

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Nutritional Physiology of the Rumen: A New Approach to Rumen Nutrition

- **A proposed new analytical procedure to be used in all feeding trials with ruminants.**
- **Results of studies which have established means to alter and control rumen microbial metabolism so as to achieve: increased rate and efficiency of weight gains; production of either high- or low-fat milk; prevention of ketosis.**
- **An explanation of the depressing effect of fish oils on fat content of milk—resulting in a new concept for the control of rumen microbial metabolism.**

By Dr. J. C. Shaw

One of the principal objectives of this paper is to propose a more fundamental approach to the energy evaluation of feed for ruminants. It is hoped that this approach will be found useful in decreasing the enormous number of trials now required or being used in the evaluation of different feedstuffs for growth, fattening and milk production. Indeed, the author would like to propose a new analytical procedure to be used in all feeding trials with ruminants, which it is believed will enhance considerably our ability to predict from one or a few feeding trials what might be expected with other feedstuffs, under either the same or different conditions. Its use will require giving careful attention to a number of new factors in the designing and carrying out of feed evaluation studies with ruminants.

An additional objective is to record the results of investigations which have established means by which we may alter and control rumen microbial metabolism so as to achieve the following:

(a) increased rate and efficiency of bodyweight gains;

(b) production of either high- or low-fat milk;

(c) prevention of bovine ketosis.

In 1956 the author, at the Maryland Nutrition Conference for Feed Manufacturers, made the following statement:

"Eventually, in the evaluation of a ration for a specific purpose, we shall need to know what the end products are in the rumen, how they are absorbed, and how they are utilized in the body. Eventually, we may know how their production may be altered so as to give the proportions which would result in the most efficient production of flesh, milk, or other products."

Within a brief span of 2½ years, the bulk of these objectives has been attained, and I am forced to conclude that the statement was far too conservative.

As an interesting sideline to the main studies, we have been able to explain the long known but little understood depressing effect of cod liver oil and other fish oils on the fat content of milk. As will be noted later, this may result in an important addition to our general proposal of a new approach to ruminant nutrition.

BASIC STUDIES—Since the proposals herein are based on the results of certain fundamental investigations, it may be of interest to review these briefly. The three most important volatile fatty acids produced from the feed consumed are acetic, propionic and butyric, and may account for 50-75% of the energy for the host animal. This brings us to the first sentence of the quotation at the beginning of this article: "Eventually, in the evaluation of a ration for a specific purpose, we shall need to know what the end-products are in the rumen, how they are absorbed, and how they are utilized in the body." We have now obtained much of this information by an intensive study of the rumen in the live animal and by maintaining both the rumen and the liver in a live state outside of the animal body. The latter was done by continuous circulation (perfusion) of blood through these organs by means of an artificial heart, and continuous replacement of the oxygen and removal of the carbon dioxide in the blood by means of an artificial lung.

The perfused rumen was found to be more representative of the rumen of the live animal than any of the more artificial rumina, the digestion of feed and production of the rumen acids proceeding at a far greater rate than has been observed in artificial rumina. The most significant findings were as follows:

(a) the rumen volatile fatty acids are produced in surprisingly constant proportions from hour to hour on a given ration;

(b) these acids are absorbed from the rumen in proportion to their production;

(c) the proportions of these acids in the rumen are relatively constant on a given diet and reflect both production and absorption. **This then permits us to conclude that an analysis of the rumen fluid at any time of the day will give us a close approximation of the relative proportions in which the volatile fatty acids are produced (and absorbed).**

By perfusing the isolated liver with blood containing the various volatile fatty acids labeled with radioactive carbon, we found that the acetic acid passes through the liver relatively untouched and thus becomes a major blood substance (metabolite) for ruminants. Propionic acid and butyric acid, on the other hand, are converted to liver glycogen and thus are available to the body as carbohydrate. Under certain conditions which are as yet not completely understood, the normal animal converts some of the butyric acid to the so-called ketones or acetone bodies rather than to carbohydrate; however, our studies with the perfused liver have indicated that most of these ketones must be produced from the oxidation of fat within the liver. Finally, studies in England and in California with radioactive acetic acid, and studies by the author and his colleagues at Maryland with radioactive beta-hydroxybutyric acid, disclosed that these two substances are the major sources of the lower fatty acids of milk fat. Beta-hydroxybutyric acid is the principal blood ketone in ruminants.

The importance of these studies is that they led us to researches which permit us to conclude that the fat content of milk is controlled to a great extent by the formation within the udder of these lower fatty acids from acetic acid and beta-hydroxybutyric acid. As will be noted later, the control of the fat content of milk is primarily a matter of regulating the production of these two metabolites. The supply of these two substances for the various body tissues can be controlled to a remarkable degree by controlling microbial activity in the rumen. The liver also plays an integral part in preparing the rumen end-products for ultimate use by the various body tissues.

The relative amount of acetic acid for the body tissues may be regulated by direct control of acetic acid production in the rumen. Carbohydrate production within the liver (and therefore blood glucose) is regulated by controlling the relative production of propionate and butyrate in the rumen. The amount of beta-hydroxybutyric acid produced is controlled indirectly by controlling fat oxidation in the liver; this is primarily a matter of regulating the amount of carbohydrate produced, since less fat is oxidized when ample amounts of carbohydrate are available, and thus the by-products of fat oxidation (acetone bodies) decrease. This means that less beta-hydroxybutyric acid will be available for the synthesis of the short-chain fatty acids of milk fat when propionate within the rumen predominates.

We have noted that there is usually a remarkable uniformity in the relative proportions (and therefore production) of the rumen volatile fatty acids in cows on the same diet. For example, nine cows on a ration of alfalfa hay and a 16% protein concentrate exhibited the following molar per cent of rumen volatile fatty acids:

Acetate	Propionate
63.0 ± 0.86	18.0 ± 0.89
Butyrate	**Higher acids**
14.9 ± 0.84	4.1 ± 0.38

These data are so uniform that all the rumen samples might well have come from one cow.

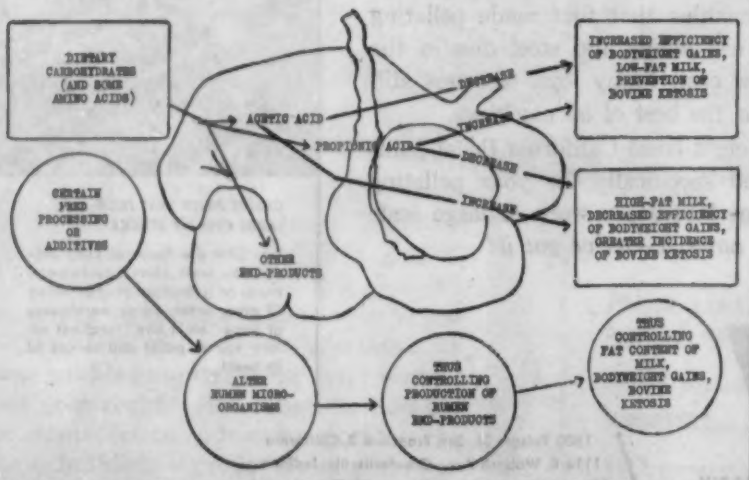
Another series of observations of importance to the main thesis of this article is that the relative proportions of the rumen volatile fatty acids do not change appreciably with time after feeding. For example, the data below show the average molar per cent of the rumen volatile fatty acids of two cows for several hours following a normal feeding of a pelleted alfalfa meal ration:

Hours after feeding	Acetate	Propionate	Butyrate	Valerate	Caproate
0	66.5	19.9	10.3	2.2	1.1
2	66.6	20.6	10.0	2.0	0.8
6	67.1	20.0	8.8	3.0	1.1
10	66.7	19.0	9.9	2.7	1.7

The importance of these data when considered in the light of the studies with the perfused rumen is that the analysis of a rumen sample drawn at any time during the day is valid for an appraisal of the relative propor-

Dr. J. C. Shaw

AUTHOR—The author of this highly significant article, Dr. J. C. Shaw, formerly was at the University of Maryland. He now is chief of the animal production branch, animal production and health division, Food and Agriculture Organization (FAO) of the United Nations, located at Viale delle Terme di Caracalla, Rome, Italy. Dr. Shaw received his B.S. degree in dairy husbandry at Iowa State University, his M.S. in animal husbandry at Montana State College and his Ph.D. in dairy husbandry, with minor in biochemistry and physiology, at the University of Minnesota. His experience has included farm management and work as a 4-H Club agent. From 1945 to 1958, Dr. Shaw was a professor in the University of Maryland dairy department. Earlier he was on the dairy department staffs at the universities of Minnesota and Connecticut. Special assignments have included work with the FAO and the Atomic Energy Commission. His research has included development of pituitary-adrenal concept of ketosis and use of glucocorticoids and ACTH for its cure; research on physiology and chemistry of milk synthesis; integration of metabolism of rumen, liver and udder, and use of fundamental studies to develop concept of controlling animal production by controlling formation of rumen volatile fatty acids. Dr. Shaw has served on numerous committees relating to dairy science, and among his awards was the American Feed Manufacturers Assn. award for ruminant nutrition studies.


DIETARY CARBOHYDRATES (AND SOME AMINO ACIDS)
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ACETIC ACID
PROPIONIC ACID
OTHER END-PRODUCTS
INCREASE
INCREASE
DECREASE
INCREASE
INCREASED EFFICIENCY OF BODYWEIGHT GAINS, LOW-FAT MILK, PREVENTION OF BOVINE KETOSIS
HIGH-FAT MILK, DECREASED EFFICIENCY OF BODYWEIGHT GAINS, GREATER INCIDENCE OF BOVINE KETOSIS
ALTER RUMEN MICRO-ORGANISMS
THUS CONTROLLING PRODUCTION OF RUMEN END-PRODUCTS
THUS CONTROLLING FAT CONTENT OF MILK, BODYWEIGHT GAINS, BOVINE KETOSIS

A diagram showing how certain feed processing or additives may alter rumen microorganisms, thus controlling production of rumen end-products and controlling fat content of milk, bodyweight gains and bovine ketosis.

TABLE 1. Effect on Rumen Volatile Fatty Acids and Fat Content of Milk of Feeding Pelleted Alfalfa Meal Alone or with Steam Heated or Unheated Corn Meal

Diet	Cow No.	Expt. period	Milk fat	Molar % of total rumen VFA C_2	C_3	C_4	C_5	Mg. VFA/100 ml. rumen fluid
lb./day		days	%					
20 alfalfa hay + 20 dairy mix	1	30	3.6	65.1	21.4	11.1	3.2	611
24 alfalfa meal pellets		40	3.1	67.0	21.4	8.3	3.2	1129
28 alfalfa meal pellets + 4 ground corn		40	2.8	65.9	22.9	8.5	2.8	1356
20 alfalfa hay + 20 dairy mix	2	30	3.4	63.9	22.0	12.2	1.9	774
32 alfalfa meal pellets		21	3.3	63.1	24.7	9.0	3.2	1173
30 alfalfa meal pellets + 4 steamed corn		19	1.4	50.3	32.5	10.4	6.8	974
20 alfalfa hay + 8 dairy mix	3	30	3.4	69.9	11.9	13.6	4.6	730
36 ground alfalfa hay pellets + 4 glucose		30	3.2	54.5	16.2	18.9	10.5	915

tions of volatile fatty acids produced. These and numerous other studies by my former colleague, W. L. Ensor, demonstrated that this was true for a series of widely different rations.

CONTROL OF FAT CONTENT OF MILK—Earlier studies had been reported to the effect that high-concentrate, low-roughage rations, and rations containing chopped hay, tended to decrease the fat content of milk and to alter the ratio of acetic to propionic acid in the rumen. However, the results were variable and difficult to duplicate consistently. Balch of England demonstrated that flaked corn, when fed with small amounts of hay, had a greater depressing effect on milk fat than ground corn. In our studies at Maryland we noted that a diet made up primarily of bread or of a mixture of cooked high-starch concentrates reduced the fat content of milk more than uncooked concentrates, when fed with moderately low levels of hay, and we concluded that the cooking of the concentrate was chiefly responsible for this greater effect. A correlation of 0.8 was noted between molar % of rumen acetate and fat content of milk, and an equally high negative correlation was noted between the molar % of rumen propionate and the fat content of milk. This led us to propose that the effect of any given ration on the fat content of milk could be predicted on the basis of the analysis of rumen fluid for volatile fatty acids and that the reverse was also true, i.e., that the molar proportions of rumen volatile fatty acids could be predicted (very roughly) on the basis of the effect of any given ration on the fat content of milk.

We then observed that the grinding (and pelleting) of hay had only a slight effect upon either the fat content of milk or on these rumen acids. However, when the ground and pelleted hay was combined with a small amount of steam heated corn, there was a phenomenal change in the proportion of these rumen acids which was accompanied by a marked decrease in the fat content of milk. These results were first reported in March of 1958 at the Distillers Feed Conference. Since then we have confirmed these findings repeatedly.

No attempt will be made here to reproduce all of the trials, since investigations were conducted with 42 different feed combinations with from 2 to 12 animals each, and involved a total of 245 rumen fluid analyses. Rather a few of the most important data will be presented. Representative data are shown in Table 1. These data show the following: (a) Normal molar proportions of rumen volatile fatty acids, normal fat test and normal levels of total acids in rumen fluid of dairy cows on a ration of alfalfa hay and a mixed concentrate; (b) slight changes only in the fat content of the milk and in the proportions of the rumen volatile fatty acids but a large increase in concentration of total rumen acids from the feeding of a ration composed solely of finely ground and pelleted alfalfa meal; (c) a moderate change in the proportions of rumen volatile fatty acids and a significant depression in the fat content of milk when the ground and pelleted alfalfa meal was supplemented with a small amount of corn meal; and (d) **a very great and rapid change in the proportions of the rumen volatile fatty acids and in the fat content of milk when the same alfalfa meal was supplemented by a small amount of steamed corn.**

The most remarkable aspect of the latter is that the total amount of propionate produced is so great in proportion to the acetate that it must be concluded that much of this increase is derived from the alfalfa meal. Thus we have a method of altering the manner in which roughage is digested in the rumen. As will be noted later, this means that we can now increase the energy value of roughage greatly by altering microbial activity in the rumen; this requires only a small amount of concentrate, preferably a steam-heated concentrate.

The large increases in the concentration of total volatile fatty acids observed when hay is ground and pelleted and fed alone or with a concentrate, probably indicate more rapid digestion, since it is known that such treatment results in more rapid passage of feed from the rumen and, as will be noted later, no decrease in total digestibility.

It is apparent that we can control the fat content of milk within wide limits and on rations made up primarily of hay. Our studies show that the decrease in fat content may be accentuated somewhat by feeding an even larger proportion of heated concentrate to ground hay.

It is the author's proposal that the precipitous decrease in fat content of milk which is effected by the above-noted "exotic" diets is due to a relative and/or absolute deficiency of the two substances most needed for the synthesis of the lower fatty acids of milk fat, namely, acetic acid and beta-hydroxybutyric acid. It is considered that the decrease in the latter is due to the increased production of propionate in the rumen, thus providing more glycogen (and glucose) with a resultant decrease in oxidation of fat and thus a decrease in the formation of beta-hydroxybutyric acid. A shortage in the two substances most needed for the synthesis of the lower fatty acids of milk fat readily explains the decrease in the fat content of milk, since it appears to be rather well proven that the formation of these fatty acids within the udder controls the formation of the milk fat.

RATES AND EFFICIENCY OF BODY WEIGHT GAINS—It has been known for many years that acetic acid is metabolized with a greater heat (energy) loss than propionic acid. The recent brilliant researches of Blaxter and co-workers in England, who have measured the heat increment in sheep fed these acids, have further emphasized this relationship. It remained to be ascertained whether this would be reflected in increased gains or efficiency in steers, particularly when rations were used which were known to effect marked changes

Complete balance (production and absorption) of volatile fatty acids being obtained by keeping excised goat rumen alive with artificial heart and lung.

in the proportion of acetic acid to propionic acid produced in the rumen.

For this purpose 16 Holstein steer calves were selected and divided evenly into two groups of eight each and fed individually. The feeds used were the same in both groups except that for one group the hay was ground and pelleted and the corn was steamed and flaked. All animals received the same intake of dry matter per 100 lb. bodyweight. The pertinent data are shown in Table 2. The processing of the feed resulted in an increase in bodyweight gains of 0.44 lb. per day per animal over a 116-day period. This was achieved with 77.7 lb. less feed dry matter per 100 lb. of bodyweight gains, which represents an increase of 15.3% in efficiency over that of the control group. Analysis of the rumen fluid of three animals in each group demonstrated a change in rumen acetic and propionic acids from 68 and 16 molar % for the controls to 47 and 41 respectively for those on the "exotic" diet. It is concluded that the principal reason for the increased performance of the animals on the "exotic" diet was the greater production of propionate at the expense of acetate in the rumen and thus a substantial reduction in energy loss in the form of heat.

Digestion trials were conducted with all animals. No changes occurred in the digestibility of either carbohydrate or fat, but a surprising increase was observed in the digestibility of the protein, i.e., 55.3% for the controls and 66.6% for those on the "exotic" diet. Since the total protein intake was considerably in excess of requirements for both groups, it is concluded that this increased digestibility of protein was of importance only in providing more energy. This increase was calculated to account for approximately 35% of the increased gains, leaving 65% to be accounted for by the change in the proportional production of the rumen volatile acids.

The ratio of hay to concentrate was approximately 1:1. Greater gains might be expected with a higher proportion of concentrate. However, when roughages are cheap, it may prove to be economical to use larger amounts for fattening purposes as well as for growing animals, since their value can be enhanced by grinding and feeding with a small amount of steam-heated or cooked concentrate. For example, the value of corncobs should be enhanced considerably when ground finely and fed with a heated grain (plus the necessary protein, vitamins and minerals).

ROLE OF SOLUBLE CARBOHYDRATE—It will be noted from our report in the January 1959 issue of the Journal of Dairy Science (see also Table 1) that the addition of glucose to a ration of ground and pelleted hay decreased rumen acetate somewhat but did not increase propionate, the increase occurring in butyrate. The fat content of milk decreased by only 10%. Thus, although both propionate and butyrate are glucogenic in the ruminant, milk fat is decreased markedly only when the decrease in acetate is accompanied by an increase in propionate. More information is needed on the intermediary metabolism of butyrate. We have already demonstrated that the intermediates from butyrate oxidation by ruminant liver slices are quite different from those obtained during the oxidation of propionate. On the other hand, the perfused liver converts both primarily to carbohydrate. It would appear that the answer lies in the greater antiketogenicity of propionate. The failure of glucose to increase markedly the proportion of propionate in the rumen indicates that the supplementation of ground hay with soluble carbohydrates will not be as effective as supplementation with cooked (steam-heated) grains for increasing the available energy obtained from hay.

The above is also believed to be the explanation for the lower efficiency of sugars than starches for enhancing the utilization of non-protein nitrogen by ruminants. It is perhaps logical that the 3 carbon propionic acid should combine with ammonia in the rumen much more readily than with acetate. Thus the "exotic" diets may be expected not only to enhance the digestibility of protein but also the utilization of non-protein nitrogen.

FEEDING PRECAUTIONS—It is of interest that the breeders of purebred beef cattle in Argentina raise their show cattle on rations of cooked grains plus moderate amounts of alfalfa hay and insist that they get much better gains. This practice is also followed in the U.S. In Japan high quality beef ("Kobe beef") is produced in which a great deal of cooked grains and small amounts of hay are fed. However, most of the earlier feeding trials in the U.S. have failed to show an advantage for the cooking of grains. In the light of re-

TABLE 2. Effect of Grinding Hay and Steam-Heating Corn on Rate and Efficiency of Bodyweight Gains (116-Day Trial) in Holstein Steers

Ration	Average initial weight	Average gain in weight	Average lb. feed dry matter per 100 lb. gain
2" chopped alfalfa hay + ground corn + linseed oil meal (1:1:.04)	274.8 ±47.0	2.00 ±0.18	581.9 ±40.9
Ground and pelleted alfalfa hay + steamed corn + linseed oil meal (1:1:.04)	276.4 ±41.6	2.44 ±0.14	424.2 ±34.6

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TABLE 3. Effect of Feeding Cod Liver Oil and Long-Chain Unsaturated Fatty Acids Upon Rumen Volatile Fatty Acids (VFA) and Fat Content of Milk

Cow No.	Additive	Time after feeding additive	Milk fat	Molar % total rumen acids				Total rumen fluid VFA
				Acetic	Propionic	Butyric	Valeric	
	ml./day	hr.	%					mg./100 ml.
1	300 cod liver oil	0	2.9	71.1	14.1	12.5	3.2	636
		4½	2.4	56.1	28.2	9.1	6.6	788
2	300 oleic acid	0	5.0	67.4	15.4	11.8	5.3	448
		4½	4.5	61.4	21.5	14.3	2.7	870
3	300 linoleic acid	0	4.0	78.9	9.9	7.7	3.4	584
		4½	2.6	62.2	29.9	14.0	3.8	762

cent studies this may be readily understood, since animals usually are offered long hay and/or have access to roughage in the form of bedding. The practice of cooking the grain for beef cattle will undoubtedly be far more effective if the hay is ground and the animals are not allowed access to the usual kind of bedding.

During the course of numerous feeding trials, we have observed repeatedly that a small amount of hay, straw or even shavings, largely obviated the effect of the "exotic" diets on the rumen acids and thus on animal performance. When feeding such diets for the production of low fat milk, greater efficiency of bodyweight gains or, as will be noted later, for the prevention of ketosis, the animal cannot be permitted access to other than finely ground roughages. This will of necessity mean that they cannot be bedded down with coarse roughages such as straw or wood shavings.

FISH OILS AND RUMEN VOLATILE FATTY ACIDS—It has been known for over 30 years that cod liver oil and other fish oils depress the fat content of milk, but the cause has remained unknown. The most commonly accepted theory has been that the long chain unsaturated fatty acids exert a poisoning effect on certain enzyme systems of the udder.

Because of the high correlations noted earlier in this article between the proportions of rumen acetate (positive correlation) and propionate (negative correlation) and the fat content of milk, it was suspected that cod liver oil exerts its milk-fat depressing effect by altering the relative production of acetate and propionate in the rumen. Some selected data from a study of the effect of cod liver oil and certain unsaturated fatty acids are shown in Table 3. A remarkable change was effected in the proportions of rumen acetate and propionate by the feeding of cod liver oil and some unsaturated fatty acids, the greatest effect being produced by the more highly unsaturated linoleic acid. It is concluded that this is the long sought answer to the effect of cod liver oil on the fat content of milk. It provides rather dramatic support for the concept that the fat content of milk is controlled primarily by the proportions in which the volatile fatty acids are produced within the rumen.

It is considered that the importance of this discovery is not so much in providing an answer to the little understood phenomena of the depressing effect of fish oils on the fat content of milk as it is in providing a new concept for the control of rumen microbial metabolism. Thus it is to be expected that the efficiency of growth and fattening can be increased by non-toxic chemicals which will decrease the proportion of acetate and increase the proportion of propionate in the rumen. It is quite likely that this will also result in an enhancement of protein digestion.

The great value to this approach is that it should not be necessary to otherwise process the ration except in so far as a complementary effect may be achieved. It should be effective for pasture as well as dry lot feeding.

PREVENTION OF BOVINE KETOSIS—The "exotic" diets discussed in this article should be highly anti-

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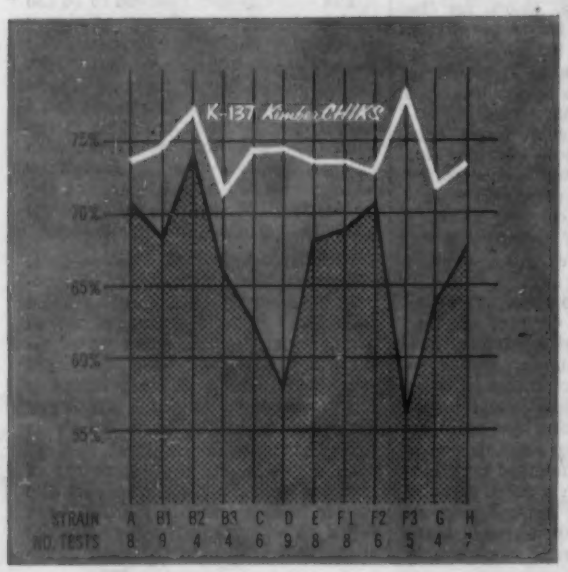

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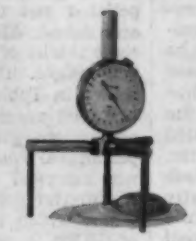

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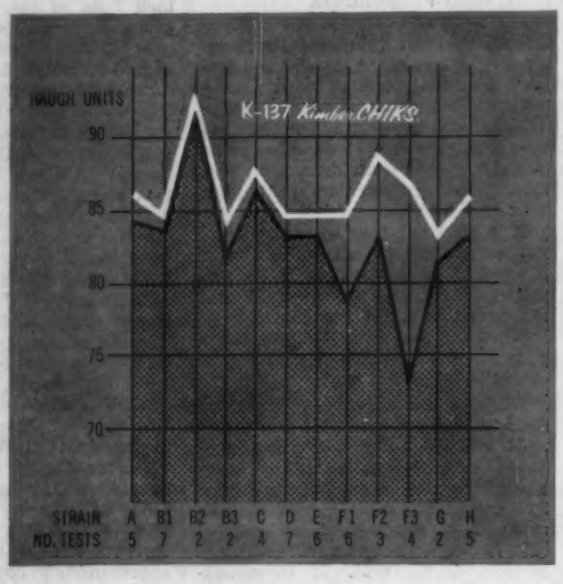

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ketogenic because of the high proportion of propionate produced in the rumen. Thus it is recommended that such rations be fed for a few weeks prepartum and postpartum in those herds in which the incidence of ketosis is high. Not only will greater sources of carbohydrate be made available but a lesser amount of energy will be required by the cow early postpartum due to the low fat content of the milk, thus making it easier to avoid a negative energy balance at that time. In addition, such rations provide a greater amount of available or net energy per unit of feed, as was noted in the steer trials. Some additional modifications in fattening and calving rations, such as the inclusion of linseed oil meal, may be needed to attain greater palatability and perhaps a greater laxative effect.

It is also proposed that consideration be given to the use of cod liver oil or other fish oils or unsaturated fatty acids for the prevention of ketosis. The highly unsaturated fatty acids should be the most effective, since they are the most potent in inducing an increased production of propionate within the rumen. Large amounts of cod liver oil may prove to be toxic when fed for too long periods of time, but need be fed for only a few weeks postpartum and perhaps a week or so prepartum, since this is the period when the incidence of ketosis is most prevalent. It is to be hoped that the above observations will stimulate a search for even more effective and economical chemicals for achieving the desired control of the production of rumen end-products.

A NEW TECHNIQUE IN FEED EVALUATION—In the light of the foregoing it is proposed that an analysis of the rumen fluid for volatile fatty acids be made as an adjunct to all feeding trials with ruminants. This will become more important as more and more attention is given to the control of the rumen end-products by the use of certain feed additives or by processing procedures such as the grinding of roughages and the heating of grains. This suggestion is meant to apply equally well to pasture- and to stall-feeding conditions. For example, an analysis of the rumen fluid of animals on pasture should provide information by means of which one can predict whether a given pasture will result in high- or low-fat milk or in high, medium or low efficiency of bodyweight gains. It is known that certain young pasture grasses exert a depressing effect on the fat content of milk. Because of the high negative correlation which exists between rumen propionate production and the fat content of milk, it is to be expected that such pastures will effect an increase within the rumen of propionate at the expense of acetate. Thus it may be concluded that pastures which tend to induce the production of low fat-milk will be the most efficient for growth and fattening of ruminants. Likewise, pastures which induce the production of high fat-milk (high acetate and low propionate in the rumen) should be the least efficient for growth and fattening.

It may also be concluded that the latter type of pasture would be the most valuable for the dairy cow during the dry and freshening period for a number of reasons: (1) Conditioning will be obtained more efficiently; (2) less feed will be required early postpartum, not only because of the higher production of propionate but also because of the lower fat content of the milk; thus the typical loss of bodyweight which occurs following calving in high-producing dairy cows should be lessened or prevented; (3) ketosis (acetonemia) in dairy cows should be reduced or prevented primarily because of the higher production of propionate (a principal source of sugar), but also because the rate of body metabolism will be lowered by the marked reduction in the fat content of milk. The early classic work of Haecker established the fact that much more energy is required to produce milk of a high fat content compared to low fat-milk.

The above considerations also apply to barn or dry-lot feeding conditions. The dairy cow may be changed to a high milk fat-producing ration approximately two to three weeks after calving if milk of a high fat content is desired. If, on the other hand, there is a premium for milk protein and other non-fat milk constituents, the cows could be maintained on the high propionate producing ration. More information is needed on the efficiency of milk production on such rations, since we have observed a decrease in milk production on some of these rations. However, on certain low milk fat-producing rations a decrease in efficiency has not been observed, so it appears to be merely a matter of further investigations with various combinations of feedstuffs.

The supplementation of digestion trial data with rumen fluid analyses should enhance the value of the former, since any appreciable change in the proportional and perhaps total production of the rumen volatile fatty acids will be reflected in changes in animal performance. With the possible exception of protein, these changes will not be reflected in digestion trial data.

The above-mentioned studies have been carried out during the period 1950 to 1958 at the University of Maryland in co-operation with numerous colleagues to whom the author is greatly indebted. These include the following at the University of Maryland: R. N. Doetsch, of the department of microbiology, with whom the ruminology project was jointly initiated; E. C. Leffel, of the animal husbandry department; and S. Lakshmanan of the chemistry department. Those now at other institutions include: W. L. Ensor, Quaker Oats research laboratories; R. D. McCarthy and J. B. Holter, Pennsylvania State University; F. G. Hueter, Oregon State University; D. R. Jacobson, University of Kentucky; A. C. Chung, Lankenau Research Institute; R. E. Brown, University of Illinois; M. E. Senger, North Carolina State Uni-

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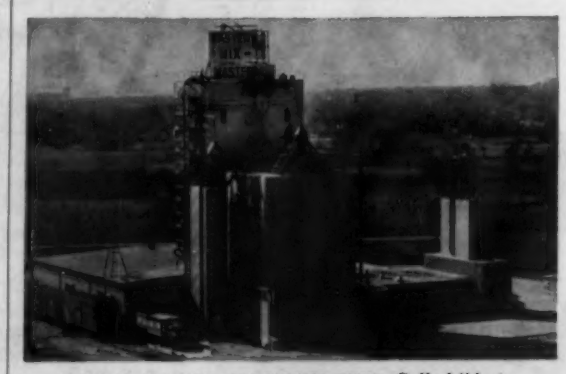
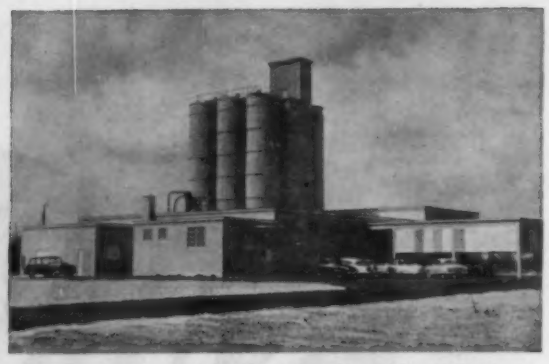


McMILLEN FEED MILL, DES MOINES, IOWA. Called "Auto-Syntronic" because it is highly automated, with operations closely synchronized, and all handling and processing electronically controlled, this new McMillen plant produces 200 tons of Master Mix concentrates or complete feeds in an eight-hour day.
Bulletin F-37 tells the story.



HECTOR SUPPLY COMPANY, DEERFIELD BEACH, FLORIDA. Here's further evidence that Florida is in the feed business to stay. Featuring the latest in pneumatic handling and unit machinery, this pushbutton mill more than doubles the capacity of the one it replaced, with less than half the labor force.
Bulletin F-32 tells the story.

PEOPLE SUPPLY, INC., CHARLES TOWN, WEST VIRGINIA. Manufacturing a complete line of livestock and poultry feeds, this brick and concrete mill features the latest in feed equipment. Credit for building a one-man feed store into a highly respected, successful, well-balanced business goes to owner Joseph A. Warrenfeltz, who has been serving Charles Town, West Virginia with quality feed for the past quarter of a century.
Bulletin F-39 tells the story.

BERLIN MILLING COMPANY, BERLIN, MARYLAND. Two and one-half times as much feed production with half as many workers was the Berlin Milling Company's answer to the highly competitive feed manufacturing situation in Maryland. The mill is designed specifically to meet the conditions of the area which include delivering 80 to 85% of the feed in bulk and 85% of the total mill production in pellets or crumbles.
Bulletin F-30 tells the story.

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versity; S. Kumar, Georgetown University; T. R. Lewis, Michigan State University; and numerous other graduate students who have each contributed a great deal to the project.

Virginia Poultry Session Oct. 20-21

RICHMOND, VA. — A program with "a strong management slant" is being assembled for the Virginia State Poultry Federation's 29th annual convention to be held here Oct. 20-21 in the John Marshall Hotel, according to Elmer Clay, Blackstone, program committee chairman. The program is to include merchandising and marketing discussions also.

"An unusually big producer attendance" has been predicted by federation officials. Some 30-40 commercial exhibits, made available for the first time at a Virginia covention, are expected to increase interest in the event. Remaining booth space was reported to be in growing demand.

Fair-Acre Feeds Layer Plan Started in Georgia

TIFTON, GA.—A laying operation involving about 40,000 white Leghorns has been set up near Tifton on a contract plan with Lindsey-Robinson & Co., Roanoke, Va., manufacturer of Fair-Acre Feeds.

Perry McCranie and Bill Bowen, two Tift County farmers who organized the Bowen-McCranie Co. in the spring to handle the Fair-Acre franchise on egg contracts, have 15,000 hens of their own that will soon be laying. The other 25,000 are owned by various families in the area who have contracted to sell their products through the Fair-Acre firm.

Mr. McCranie and Mr. Bowen say they plan to put in 5,000 additional layers at a later date, then after "catching our breath," will put in some more. Other people in the area are expected to put more on feed as well.

Bowen-McCranie also sell feed to the growers with whom they contract. They buy the Fair-Acre supplement, which is mixed with Georgia corn. Tifton Feed & Milling Co. in Tifton grinds and mixes the feed on custom basis.

The aim of Bowen-McCranie Co. was to have some 100,000 hens on the Fair-Acre marketing plan within about a year.

The eggs produced under the plan are taken to Tifton for storage at the South Georgia Ice Co. A Fair-Acre refrigerated truck picks them up and hauls them to the company's processing plant in Farmville, Va., for grading and packing.

R. C. Smith Promoted

NASHVILLE, TENN. — Raymond C. Smith, veteran accountant and employee of Seco, Inc., since 1958, has been appointed comptroller of the feed mill manufacturing corporation, according to Paul Zimmerman, executive vice president.

E. C. Lane K. J. Maltas

A. E. Staley Names 3 Assistant Secretaries

DECATUR, ILL.—The board of directors' appointment of Kenneth J. Maltas, James W. Moore and Edward C. Lane as assistant secretaries of A. E. Staley Manufacturing Co., was announced recently.

Mr. Maltas is grain division manager, Mr. Moore is crude oil department manager and Mr. Lane is meal sales department manager.

Paul W. Atwood, president of the U B S Chemical Co., was named a member of the board of directors of the Staley firm. The Cambridge, Mass., chemical company was acquired recently by the Decatur corn and soybean processor.

The board of directors also voted a quarterly dividend of 25¢ a share on common stock, with payment to be made Sept. 4 to stockholders of record Aug. 21. A dividend of 94¢ on $3.75 preference stock was voted to be paid Sept. 20 to stockholders of record Sept. 4.

Mr. Atwood succeeds Dr. R. E. Greenfield, who retired earlier this year as vice president, manufacturing.

Mr. Maltas started with the company in the feed department 26 years ago. He became assistant manager in grain in 1945 and has headed the grain division since 1953.

Mr. Moore joined the company in 1941 as an industrial sales representative, became assistant oil sales manager in 1948 and has been manager of the crude oil department since 1952.

Mr. Lane started with the company as merchandising manager in feed sales in 1952 and later became manager of the meal sales department.

Feed Dealers Guests

CEDAR RAPIDS, IOWA—Guests of Wilson & Co., Inc., at a dinner here recently were 265 Iowa feed dealers. Wilson hosts included H. Amalong, plant manager, and R. Wheeler, administrative assistant. Entertainment included a Cedar Rapids-Fox Cities baseball game. Special guests included state officers, State University of Iowa faculty members and representatives of the Western Grain & Feed Assn. George R. Coontz, manager, Wilson feed ingredient sales department, was in charge of the dinner program.

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FARMERS SUPPLY AND FEED COMPANY, REIDSVILLE, NORTH CAROLINA. This aggressive dealer operates an economical custom grinding and mixing mill to provide better service for his customers. By proper planning he has built a profitable, stable business designed specifically to meet local needs.

Bulletin F-26 tells the story.

MURRAY'S FEED SERVICE, FRANKFORD, DELAWARE. Here is a dramatic story of a modern feed mill rebuilt with foresight and courage after a disastrous fire had destroyed everything but the grain storage and drying facilities. This four story, up-to-date mill has an outstanding reputation for technical excellence and quality production.

Bulletin F-15 tells the story.

NIXON AND COMPANY, DES MOINES, IOWA. A one-story modern feed plant producing feed at approximately .5 to .7 manhours per ton. Nixon has no grain processing operations; it buys finished ground material. Majority of output is in pellet or crumble form and is sold in bulk.

Bulletin F-25 tells the story.

CONSUMER COOPERATIVE ASSOCIATION, IDA GROVE, IOWA. The extensive use of pneumatic conveyors for unloading bulk ingredients and for inplant transfer and processing, highlights this 100 ton per day single story feed processing plant.

Bulletin F-36 tells the story.

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Mississippi Research On Beef Cattle, Sheep And Hogs Is Reported

STATE COLLEGE, MISS.—An annual report on the research on beef cattle, sheep and hogs at Mississippi State University was published recently in Mississippi Farm Research.

Excerpts of the report by Dr. Charles E. Lindley, department head, follow:

Beef Cattle Studies

Feeding stilbestrol to fattening steers increased the rate and efficiency of gain. Use of it throughout the feeding period, during the first half of the period or during alternate weeks produced similar increases in rate and efficiency of gain. Feeding 10 mg. of tranquilizer per head per day produced a very small increase in daily gain.

Penicillin controlled bloat on Ladino clover for a 20-day period. When penicillin dosage was discontinued bloat occurrence and severity increased rapidly.

Heifer calves receiving no protein lost an average of 54 lb. during a 65-day feeding period. Those receiving 1 and 2-lb. of cottonseed meal made average gains of 24 and 71 lb., respectively. The heifers on no protein did not completely recover from the treatment. Steers on a fattening ration receiving 1, 2 and 3 lb. of cottonseed meal gained 1.91, 2.11 and 2.17 lb. per day. There was very little difference in carcass grade.

The reproductive organs from low fertility cows were studied in an attempt to locate some causes of poor reproduction. A large number of bacteria have been isolated from the reproductive tracts of the cows but no conclusions have been drawn from these findings. From data at all branch stations where cattle are kept, correction factors for age of dam, age of calf and sex of calf were determined for use in selecting replacement cattle.

Large differences were noted among heifers in age at first heat and regularity of heat. These differences will be related to future reproductive performances of the heifers.

A study of large, medium and small type cattle was initiated to determine the most profitable type cattle for Mississippi conditions. Several feeding and management practices are being studied to determine how they affect carcass quality. The third annual beef bull performance test and bull sale was held and an on-the-farm performance testing program was started. At present 28 breeders are participating in this program.

Swine Studies

Limiting the TDN intake of gilts by feeding oats increased the number of live embryos. Switching to a high energy ration just before breeding and maintaining the gilts on this ration for a 36-44 day period increased the number of live embryos still further. Going from a high energy ration to a low energy ration decreased the number of live embryos.

A corn-soybean meal ration produced higher daily gains than did commercial tankages. When a special tankage (with the bone removed) was used, daily gains equaled those on the soybean meal ration.

The antibiotic hygromycin B was not effective in controlling internal parasites under Mississippi conditions.

Good Ladino pasture alone for pregnant sows produced as good results as when sows received various levels of feed.

More than 800 lambs were used to study the value of hormone implants in lambs on winter grazing. Both 3 mg. and 6 mg. implants increased daily gain. There were no undesirable side effects and the slaughter grades were not reduced. The cost of implanting is very small and should be of value to sheep producers.

"They seem lots lighter when you drag 'em"

Rate Increase Opposed

STOCKTON, CAL.—The transportation committee of the Stockton Grain Exchange recently voted to oppose the petition of the California Trucking Assn. request to the Public Utilities Commission for an emergency surcharge and increase for commodity rates within 14 coastal counties. The committee also voted to oppose the petition of the rails for a similar increase.

According to Edwin A. Kauppila, the Stockton exchange is lending its support to the California Hay, Grain & Feed Dealers and San Francisco Grain Exchange's case against the proposed increases.

BUYS ELEVATOR

IDAHO FALLS, IDAHO — Jack Thomas, of Jack Thomas Grain & Livestock Co., has announced the purchase of the Clyde Hess & Son elevator, bringing an additional 35,000 bu. grain storage to his present facilities. Mr. Thomas said he will operate the Hess elevator in conjunction with his own 300,000 bu. elevator. Besides the storage facilities, the new warehouse will have a complete farm supply stock, feed and related items.

Just one small area in your store featuring Wayne Dog Food can produce enough extra sales to take care of a good share of your monthly rent! Hundreds of Wayne Dealers are doing it.

Time and again, surveys prove that in-store displays *increase sales up to 500%*, and it's sure-fire with Wayne Dog Food. Here are 3 big reasons why:

. . . Dog *owners* like the full, well-balanced nutrition that Wayne research assures. Strong, healthy pups and well-conditioned grown dogs just naturally result.

. . . Dogs *themselves* like the texture and rich palatability of Wayne.

. . . Wayne is so *easy-to feed*, with no side-feedings of meat, vitamins or supplements needed.

Decide now to make a small floor space a big rent payer . . . with fast-repeating Wayne Dog Food. Ask your Wayne Representative or write to address below.

Wayne Dog Food
SALES-MAKING HELP FOR YOU . . .
Consistent Advertising in Dog Magazines
•
Field Trial Supplies
•
Dog Club Supplies
•
Premium Program
•
Store Displays
•
Self-Feeder Promotion

try it...it's a real tail wagger!
WAYNE DOG FOOD
Allied Mills, Inc.
Dog Food Division
Fort Wayne 1, Indiana

More profit on feed when you mix your own brand!
BROWER *Whirlwind* FEED MIXER
Earn up to $1.50 profit per bag by mixing your own brand of feed with the BROWER MIXER . . . the extra profits soon pay for it! WHIRLS the ingredients instead of just tumbling them . . . mixes a perfect blend in about 10 minutes . . . fast, economical! Built for years of trouble-free service. Five sizes. World's Largest Selling Mixer!
BROWER MFG. CO., 566 N. Third St., Quincy, Ill.
Write for FREE CATALOG

Hy-Line
PRECISION
GENETICS

creates a
harder-working
layer

Hy-Line®

WHITE-EGG LAYERS

Hy-Line® WHITE-EGG LAYERS . . .
PROVED SUPERIOR PERFORMERS I

In number of top rankings, Hy-Line layers lead all other b

FACTS ABOUT RANDOM SAMPLE TESTS

Official agencies in many states conduct Random Sample Tests. Most leading chicken breeders enter their newest strains and varieties in these tests. But since results are announced from 18 to 24 months after entries are made, the results tend to compare performance of chicks sold in the past . . . not necessarily the up-to-date, improved varieties you can buy today. Random Sample Tests indicate the general progress of a breeding program, but cannot show differences precisely to the penny or to the egg. Therefore, use Random Sample Test results as a general guide. Try to compare results from many tests, since many comparisons will help cancel out unusual records caused by luck or freak results.

Even more valuable buying guides are the performance of chickens under actual laying house conditions in your area, the reliability of the breeder, and the reputation of your local distributor.

IN OFFICIAL TESTS

birds in 1957 and 1958 Random Sample Laying Tests

Choosing your future layers is an important decision . . . one that should be based on fact. Frankly, Hy-Line breeders wouldn't have it any other way.

Fortunately, there are many sources of information which can help guide your selection. For example, the combined results of official Random Sample Laying Tests conducted during the last two years show that Hy-Line layers have a clear superiority over other layers, including the other 9 nationally sold chicks. Hy-Line layers hold 19 first, second or third rankings, compared to a combined total of 24 top-three rankings for the other 9 nationally sold chicks. And Hy-Line entries alone won as many first places as the combined total of the other 9 nationally sold chicks. These rankings are based on income over costs as reported by all published tests of 1957 and 1958.

Performance in official tests like these, plus reliable, profitable results in flock after flock, make Hy-Line birds the world's most popular layers. Hy-Line Precision Genetics creates layers with a bred-in capacity to live, lay and produce efficiently. Once these superior traits have been established, Hy-Line birds can be duplicated by the millions from the same inbred lines. Hy-Line chicks reach you just as the breeder perfected and proved them in research trials and official tests.

This booklet gives you the most important facts about Hy-Line birds . . . their performance, how they are bred, how they are tested. It tells you how Hy-Line Precision Genetics blueprints the future of Hy-Line layers . . . how the new science of blood typing aids in selecting the best parent stock and in further improving already outstanding commercial varieties. It gives you much other information important to every poultryman who wants to buy on facts. We hope you will find this discussion interesting and useful . . . that it will help you make your choice of the right kind of layer for your flock next year.

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INCOME OVER COSTS

Number of top 3 places won by Hy-Line layers compared with other 9 nationally sold chicks in 1957 and 1958 Random Sample Tests.

		1st	2nd	3rd	Total
Hy-Line layers (includes all white-egg entries)		7	5	7	19
Brand A Brand B Brand C Brand D Brand E Brand F Brand G Brand H Brand I	Total placings	7	8	9	24

No other brand ranked first in more than 2 tests.

SOURCES FOR LATEST RANDOM SAMPLE TEST INFORMATION

The Random Sample information contained in this book covers all 1957 and 1958 tests in which Hy-Line birds were entered. At the time this booklet was printed, Hy-Line layers entered in the 1959 Random Sample tests were making the most outstanding record they've ever made. Be sure to write for the results as soon as they are available. Addresses are:

***Central Production Test**
Dept. of Agriculture, Ottawa, Ontario, Canada

California Random Sample Test
California Poultry Improvement Assn.
Modesto, California

Florida Random Sample Test,
Chipley, Florida

***Iowa Official Multiple Unit Test**
409½ Douglas, Ames, Iowa

***Minnesota Random Sample Test**
611 State Office Bldg.,
St. Paul 1, Minnesota

Intermountain Random Sample Egg Laying Test
Utah State Agricultural Experiment Station, Logan, Utah

***Wisconsin Chicken Random Sample Test**
Wisconsin Dept. of Agriculture
State Capitol, Madison 2, Wisconsin

***Pennsylvania Random Sample Laying Test**
Bureau of Markets, Dept. of Agriculture
South Office Building, Harrisburg, Pennsylvania

Tennessee Random Sample Laying Test
Poultry Department, University of Tennessee, Knoxville 16, Tennessee

Texas Random Sample Test
Texas Agric. Experiment Station
College Station, Texas

***Missouri Random Sample Test**
Missouri Poultry Experiment Station
Mountain Grove, Missouri

***Central New York Random Sample Test**
Dept. of Poultry Husbandry
Cornell University, Ithaca, New York

One other Random Sample Test is the Western New York. Hy-Line not entered; it was allowed to enter only one New York test before the 1959-60 test.

*Results available only after test is completed in fall.

Hy-Line 934 Series bi

TOP PERFORMANCE IN A

1 HIGH PRODUCTION

Hy-Line 934 Series white-egg layers are consistently high egg producers. Results of *Random Sample Tests during the past 2 years show Hy-Line birds averaged 17.5 more eggs apiece than the average of the 9 other nationally sold chicks . . . and 21 more eggs than the average of all competitive entries. High production like this is one of the advantages bred into Hy-Line birds through Hy-Line Precision Genetics.

2 HIGH LIVABILITY

The bred-in ability to fight off stress-induced troubles, sustain high production and produce through a long laying life is an important part of Precision Genetics. Hy-Line 934 Series birds recorded 4.2% higher livability than the average of 9 other nationally sold chicks in *Random Sample Tests during the past 2 years. Hy-Line entries showed 4.9% better livability than the average of *all* competitive entries in these same tests. Hy-Line livability helps increase your profits.

MORE NET PROFIT OVER FEED AND C

How well the above 4 all-important profit factors team up in your layers affects the size of your profit. That's why you can expect Hy-Line layers to deliver the maximum net profit your poultry raising ability can produce, and your egg prices allow. Hy-Line breeders have combined into their 934 Series layers top performance in all 4 big income factors. How skillfully they've done it was shown in the 1957 and 1958 official *Random Sample Laying Tests.

Hy-Line 934 Series layers produced 51¢ more income over feed and chick costs per bird than the average of the other 9 nationally sold chicks . . . and 64¢ more than the average of all competitive entries.

Average profit of Hy-Line layers was higher than

birds deliver maximum income,

ALL 4 IMPORTANT INCOME FACTORS...

3 HIGH FEED EFFICIENCY

Among the leading layers today, the Hy-Line 934 Series white-egg layers are in a class by themselves when it comes to feed efficiency. Compact, economical Hy-Line birds averaged .3 lbs. less feed per dozen eggs than average of *Random Sample Test (1957 and 1958) entries from the other 9 nationally sold chicks . . . and .4 pounds less feed per dozen than the average of *all* competitive entries. These thrifty layers cut your feed bill, raise your profit per dozen eggs.

4 EXCELLENT EGGS, TOP PRICES

In fifteen 1957 and 1958 *Random Sample Tests reporting egg value figures, Hy-Line layers brought ¼¢ higher average market price per dozen eggs than the average of all competitive entries . . . and over ½¢ higher per dozen than the average of the other nine nationally sold chicks. That's because of all-around excellence of Hy-Line eggs . . . high percent of large and extra large, thick, smooth shells, minimum of cracks and checks, firm whites, fewer blood and meat spots, white eggs free from tints.

CHICK COSTS IN OFFICIAL TESTS

any of other nationally sold birds.

This is solid official proof that Hy-Line 934 Series layers put the profit odds heavily in your favor. And *Random Sample Test results give you an unbiased comparison of performance, plus full assurance that the Hy-Line birds you buy have the bred-in ability to produce real dollars-and-cents results in your laying house.

*** Random Sample Tests**

Hy-Line 934 Series data on these pages were computed by averaging 934-A, 934-B, and 934-C in 18 1957 and 1958 published tests in the United States and Canada. These include all tests in which 934-A, 934-B, and 934-C competed, except the 1958 Iowa Multiple Unit Poultry Test which used different methods of comparison. Hy-Line 934 Series entry in this Iowa test topped all competitors in income index, averaging 46¢ more per bird than average of all competitors.

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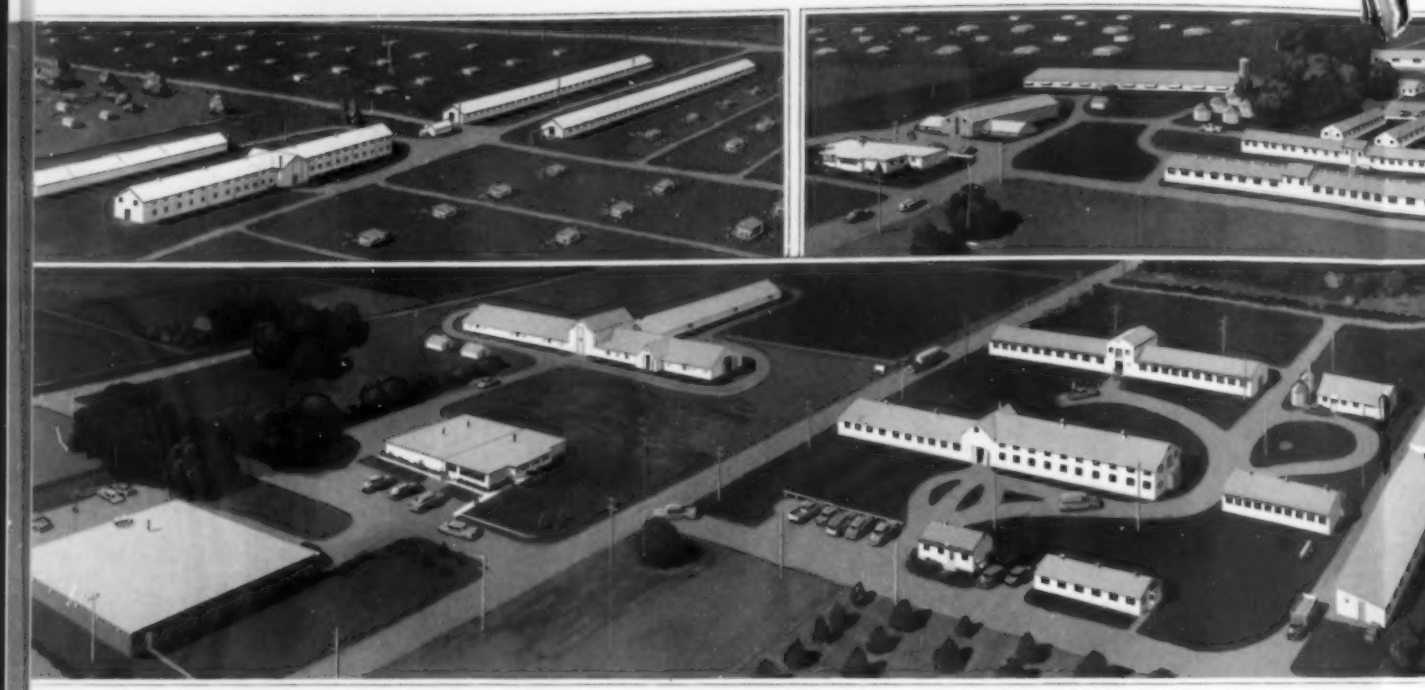
HY-LINE PRECISION GENETICS . . .

RESEARCH THAT PRECISELY SHAPES THE PERFORMANCE POTENTIAL OF EVERY HY-LINE CHICK



Hy-Line research farms at Waukee, Dallas Center, and Johnston, Iowa. Picture at upper right is composite of Dallas Center research farm and research laboratory. Not shown is another Hy-Line research farm located at South Salem, N.Y.

Research is an organized way of combining experiments, experience and inspiration to pioneer new frontiers of knowledge. This is the basis of *Hy-Line Precision Genetics*, ever at work to raise your profit potential from laying chickens.

Hy-Line *research experience* in producing hybrid poultry dates back to the early 1930's. A group of Hy-Line scientists began producing superior layers by the same genetic techniques that gave the world hybrid corn.

Hy-Line *research experiments* have used millions of birds since those early beginnings. The search for new and improved varieties never lets up. Hy-Line breeders continually develop new inbred lines — test them — upgrade them — combine them into experimental crosses.

Hy-Line *research inspiration* stems from a constant desire to "make the best even better." This Hy-Line research team of 9 geneticists, a pathologist, a research veterinarian, a bacteriologist, a test specialist and 65 full-time research helpers make the benefits of Precision Genetics a dependable pay-off for you in your poultry operation when you choose Hy-Line layers.

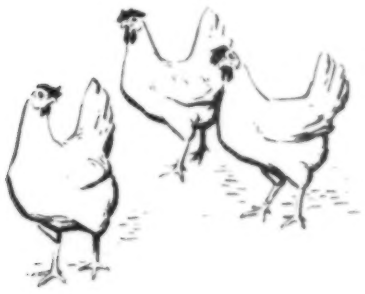
This research for ever-improving Hy-Line layers never lets up . . . 460,000 birds for experiments each year!

Hy-Line layers are true hybrids. Today's Hy-Line layer is the result of genetic research begun nearly three decades ago by Hy-Line scientists. This work has made it possible to tailor Hy-Line white-egg layers to your needs through *genetic blueprinting*, pioneered at the Hy-Line Poultry Farms.

Hy-Line breeders spend 4 to 7 years developing a single inbred line. These new lines are used to create experimental crosses. About 460,000 birds a year are hatched for experimental work alone.

The photos on this page show some of the steps which create the accuracy of Hy-Line Precision Genetics . . . from careful coding of each egg to entering individual performance data in the master record books. This systematic, painstaking method makes it possible to find promising bloodlines . . . birds with superior traits . . . further refine and develop the best of these strains.

The goal is to continue widening the profit advantage of Hy-Line layers by a careful balance of all four important income factors. In this way, Hy-Line layers are steadily improved to meet your ever-changing needs.

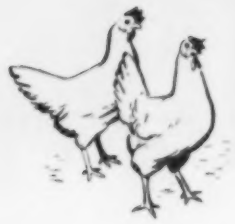


Every egg from the individual pens is pedigree-coded when gathered from the trapnest. Next stop: Hatchery.

All fertile eggs from one week's production of each hen go into a separate compartment in the hatching trays. Chicks get pedigree wingband.

Metal wingband stays on chick for life. Intricate coding system precisely identifies chick and its "family tree."

Production, egg quality, livability and many other traits of the individual test bird go into books that *chart the "history" of every layer.*



Hy-Line
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GENETICS

BLOOD TYPING . . . *advanced research tool of*

secrets of se

Over 700 different antiserums used to identify the many blood groups are stored in laboratory freezers.

In addition to blood work, the Hy-Line staff uses a full complement of modern laboratory equipment to investigate other possible techniques for breeding better layers.

The dynamic new science of poultry blood genetics was pioneered commercially at Hy-Line Poultry Farms a decade ago. Since then, it has steadily unlocked new secrets which hasten the year-by-year improvement of Hy-Line layers.

This remarkable new science is based on the fact that chickens, like people, have different blood types. And in poultry, blood typing gives important clues to how well a bird will survive and produce.

Although a highly complicated science, blood typing gives Hy-Line poultry breeders a new and better tool for the development of improved layers.

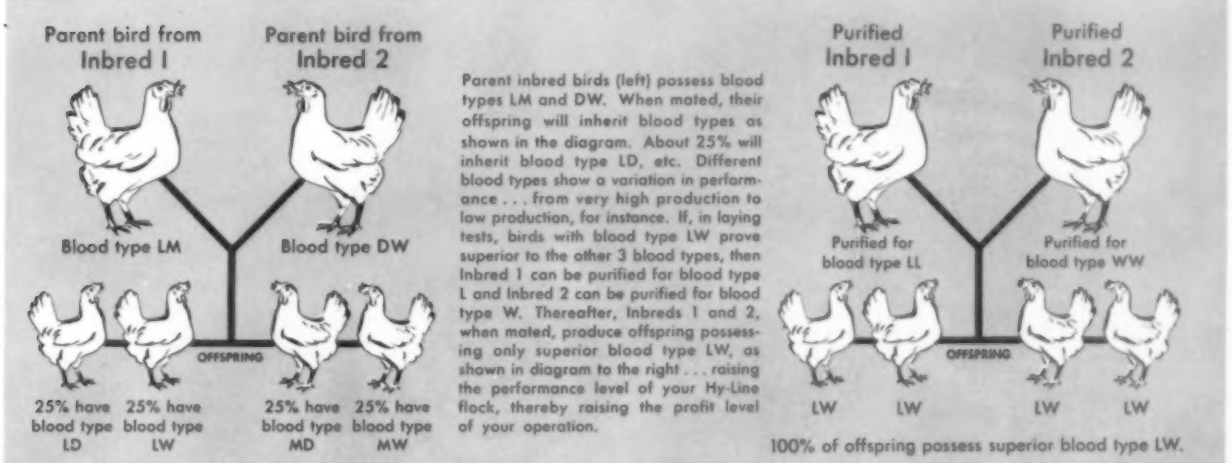
Primitive man believed that blood was magic, mysterious. He thought that men or animals were sick or healthy because of demons and devils which sometimes got into the blood. *(Continued next page)*

of Hy-Line Precision Genetics unlocks new selecting parents to produce superior layers for you

Scientists know that demons and devils are superstitions. But they agree that primitive man had a basis for his belief that strange secrets were carried in the blood. The carriers of these secrets today are called *genes.* And scientists proved that the way living things grow and thrive follows certain patterns caused by genes.

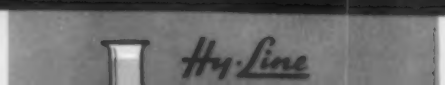
Genes affect the color of your eyes, see to it that your legs are the same length, control the placement of your veins and arteries and nerves. They are what cause a child to look like his parents. They have a definite effect on our resistance to many diseases.

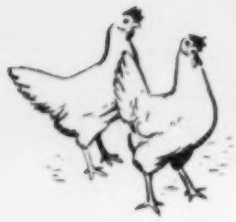
Genes cannot be seen even under the most powerful microscopes. But their "fingerprints" can be found in the blood. In poultry, these fingerprints are the known blood types or groups which have been discovered by scientists. Through long and patient study, scientists know that each of these groups has an influence on such traits as egg numbers, livability, egg weight, profits and feed efficiency. By experimental crossings which combine these blood groups, superior inbred lines and crosses of inbred lines can be produced with greater speed and accuracy than ever before. This is the science of *blood genetics,* one important part of Hy-Line Precision Genetics.



Parent inbred birds (left) possess blood types LM and DW. When mated, their offspring will inherit blood types as shown in the diagram. About 25% will inherit blood type LD, etc. Different blood types show a variation in performance . . . from very high production to low production, for instance. If, in laying tests, birds with blood type LW prove superior to the other 3 blood types, then Inbred 1 can be purified for blood type L and Inbred 2 can be purified for blood type W. Thereafter, Inbreds 1 and 2, when mated, produce offspring possessing only superior blood type LW, as shown in diagram to the right . . . raising the performance level of your Hy-Line flock, thereby raising the profit level of your operation.

100% of offspring possess superior blood type LW.





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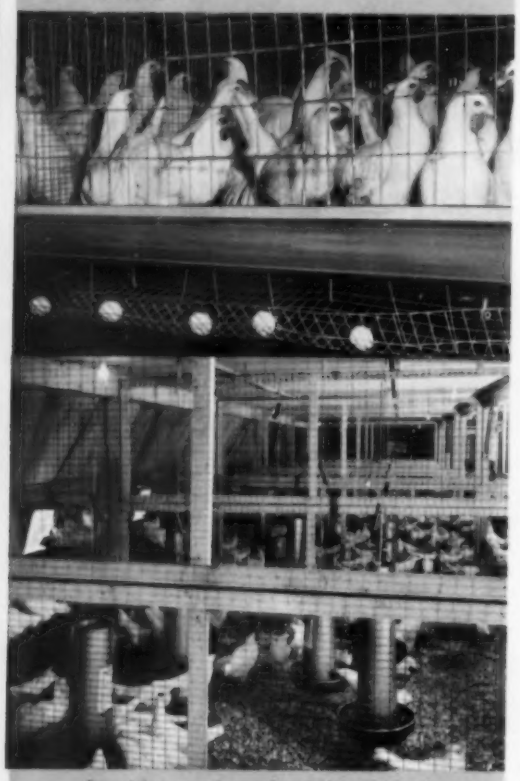
PERFORMANCE TESTING . . .

practical research tool of Hy-Line Precision Genetics

More than a thousand new combinations of inbred lines are made each year, then trapnest-tested.



Promising experimental varieties compete in flock sizes in Multiple Variety Tests . . . on floor and cage plants much like your own . . . at 30 locations coast to coast.

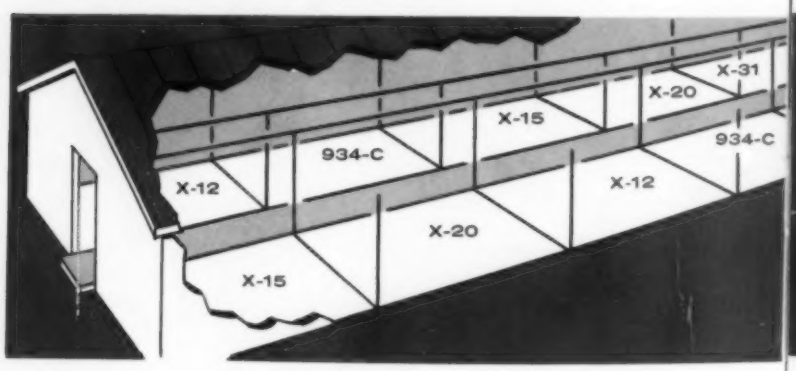
Finds experimental varieties offering you greatest profit potential. Experimental Hy-Line layers get their "final examination" on poultry farms and ranches much like your own. Every year 150,000 layers go into cage and floor operations where they have a chance to show what they can do under practical, work-a-day conditions. This singles out the experimental varieties offering you the greatest profit potential.

This testing in every section of the U.S. and parts of Canada involves both trapnesting of individual birds and flock-size tests known as Multiple Variety Tests. Trapnesting compares the egg production, livability and other important traits of experimental varieties against *rigid commercial standards.*

Multiple Variety Tests give Hy-Line researchers a chance to put both experimental and commercial flocks into the same housing and management conditions.

Flocks of experimental varieties must show clear superiority over current commercial Hy-Line birds before they can be considered worthy of a place in your poultry house.

Sketch shows how Multiple Variety Test house is divided into large sections to test flocks of commercial and experimental varieties under same environmental conditions. Numbers designate varieties.



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THE HY-LINE EGG . . .

why it consistently brings top market prices

Hy-Line 934 Series eggs are uniformly good in size, shape, looks and interior quality. The right size for packing in standard cases. Efficiently large, but not wastefully big. Shaped to pack well, resist breakage in storage or shipment. Thick, smooth shells with minimum of cracks and checks. High in interior quality, with firm whites. Practically free of blood and meat spots. Pure white eggs, free of tints.

Putting all these factors into profitable balance is another accomplishment of Hy-Line Precision Genetics.

Hy-Line birds lay a high percent of large and extra large eggs. In the 1957 and 1958 Random Sample Tests, they averaged 2.6% more large and extra large eggs than average of other 9 nationally sold chicks . . . and 4.9% more than average of all competitive entries.

In 49 studies made in eight 1958 Random Sample Tests, Hy-Line 934 Series layers showed greater freedom from blood spots than average of other 9 nationally sold chicks. In 1958 Pennsylvania Random Sample Test, Hy-Line eggs graded 100% A or AA, and 98.4% in the 1958 Texas test.

But most important to you . . . eggs from Hy-Line 934 Series layers brought in ¼¢ higher market price per dozen than the average of all competitive entries in fifteen 1957 and 1958 Random Sample Tests reporting egg value figures . . . and they brought in a higher market price per dozen than eight of the other nine nationally sold layers, averaging ½¢ higher per dozen (the one exception averaged only one-tenth of a penny higher).

To command top market prices is undisputed proof of the all-around excellence of Hy-Line eggs. Add this bonus income to the profitable Hy-Line advantages in egg production, livability, and feed efficiency. Result: maximum profit per layer with Hy-Line birds.

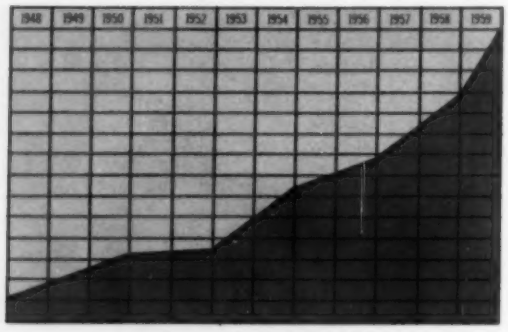
Experimental birds are judged partly on interior quality of their eggs: thick whites, freedom from blood and meat spots.

Large, top grade, white Hy-Line eggs command top prices. Pack well, resist breakage. Minimum of cracks and checks.

Hy-Line geneticists test shell thickness in salt solutions of varying density, breed for thick, smooth shells.

PROFITABLE PERFORMANCE . . .

makes Hy-Line the world's most popular layer



The most important development in the history of the poultry industry has taken shape during the past five years. It is the swiftly increasing trend to better-bred layers. Poultrymen now recognize the wisdom of paying more for chicks which can produce substantially greater profits in the laying house.

As the sales growth at left clearly shows, the leader in shaping this new trend is Hy-Line. 1959 marked a 30% increase in the use of Hy-Line chicks by poultrymen the world over . . . during a period when competition was never greater. During the last 5 years, the number of Hy-Line chicks hatched has more than doubled. As a result, Hy-Line birds today are the world's most popular layers.

Practical poultrymen select chicks on the basis of performance and profits. That's why they're switching to Hy-Line white-egg layers, the harder-working layers bred for top income performance.

Hy-Line®

WHITE-EGG LAYERS

Hy-Line is a registered trademark of
Pioneer Hi-Bred Corn Company, Des Moines, Iowa

HY-LINE POULTRY FARMS

A DEPARTMENT OF PIONEER HI-BRED CORN COMPANY

1206 MULBERRY STREET

DES MOINES 9, IOWA

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Printed in U. S. A. 130M-59

Research News AND Review

A roundup of scientific information prepared for the feed industry
- Reprinted complete from AGRADate, Vol. 2, No. 5

Pfizer

Rumen Microbiology

A survey of some of the historical antecedents to modern investigations on the microbiology of the rumen reveals several main lines of interest subsequently followed by ramifications to ancillary problems. Surprisingly, these antecedents (even though selected arbitrarily) may be considered to go back to 1855; and, consequently, it must be realized that whereas intensive research on rumen microorganisms and their functions began in the early 1940's, these studies by no means constituted the initial attack launched in this direction.

With ruminants, the primary organ in which cellulose digestion occurs is anterior to the true stomach and small intestine as compared to the posterior arrangement in most other herbivora.

This anatomical arrangement permits extensive microbiological breakdown of cellulose before reaching the intestinal tract where food is subjected to normal gastric secretions. This type of digestive system appears to permit most efficient utilization of feedstuffs normally consumed by herbivora. In the ruminant, about 70% of the total cellulose digestion occurs in the rumen, the remaining 30% of cellulose digestion occurs in the large intestine. In addition to cellulose digestion rumen microorganisms contribute the following to nutrition of the host animal: protein synthesis, B vitamin synthesis, fat alteration and soluble carbohydrate digestion. Nutritional factors which modify the above mechanisms may well improve the overall productive efficiency of the ruminant animals.

In 1855, it was discovered that cattle digested crude fiber; these observations were extended in 1869 to goats and sheep. Interest in the rumen was manifested mainly in cellulose digestion for some time following these reports. In 1884, it was concluded (1) that acetic and butyric acids resulting from cellulose fermentation could be utilized by ruminants after absorption—a view which attracted few followers at the time. Problems involved in microbial fermentation of cellulose within the rumen have not been resolved completely as yet; and, in fact, investigations in this area are being pursued vigorously at present.

It has been correctly pointed out (2) that by fermenting the most resistant fodder constituent (cellulose) at the beginning, rather than at the end, of its digestive tract, the ruminant has necessarily acquired a large number of microbiological problems that would be quite difficult to a fermentation chemist.

Another facet of the subject was revealed in 1891 (3), when it was suggested that nonprotein nitrogen might replace part of the protein of ruminant rations. Validity of this claim has been questioned from time to time; but the fact that approximately 75 thousand tons of urea are used annually, as feed supplements for ruminant rations, would seem to dispel doubt concerning acceptability of the idea. Nevertheless, basic microbiological changes involved in this practice are obscure and but dimly perceived at present.

A third line of investigation opened in 1915. It was demonstrated (4) that ruminants could be maintained for some time on rations deficient in certain vitamins without manifesting deficiency syndromes. It was concluded that intestinal flora was synthesizing the required factors, irrespective of their presence in the ration.

It has become increasingly evident that a number of important physiological functions of ruminants are mediated by microflora of the rumen. These include digestion of insoluble (inedible to most monogastric animals) materials used as foodstuffs; synthesis of vitamins and other factors required for the wellbeing of the host; and synthesis of protein from simple non-protein sources. Obviously, it is of greatest importance to determine characteristics of the organisms involved in these transformations, and conditions under which they will be carried out with maximum efficiency. Benefits derived will be manifested not only in greater yields of meat, wool, milk and a variety of economically valuable animal products; but also much needed information will be supplied on symbiotic, synergistic and other interaction phenomena on the cellular level—and this will be of inestimable value in various areas of general biology (5).

Methodology needs improvement . . .

There is an unfortunate gap in methodological approaches to rumen microflora studies. It lies in the fact that none of the techniques in current general use satisfactorily covers the interaction involved between various representatives of rumen population. This deficiency in technique has to be overcome before valid **in vitro** work can be done. Principal methods used by most investigators may be roughly classified into: (a) pure culture studies; (b) artificial rumen studies; and (c) washed suspension studies.

First method used to study rumen bacteria was based on classical pure culture techniques. The method allows one to study metabolic (fermentation characteristics, vitamin requirements, etc.) activities of the predominant bacterial species which were presumably physiologically active in the rumen, under controlled physico-chemical conditions. This technique, in the hands of several workers (6, 7, 8, 9), has yielded much valuable information concerning certain groups of rumen bacteria. It should be noted that media employed are not usually selective, and thus the method has not been very useful in supplying information of kinetic changes in certain groups of population; doubtless this will be overcome by further investigations. It is also difficult to equate numbers of a given kind of bacterium found on a given medium, with its importance in the rumen. A further criticism is that species isolated as pure cultures on an artificial medium may show characteristics not consistent with those found within natural environment of the rumen. These objections notwithstanding, the pure culture method has been most useful. In Table 1 there is presented a list of bacteria thus far isolated in pure culture from the rumen. They are all considered authentic and important species, and information presented in the table was derived solely from work with pure culture.

Second method in use is the so-called "artificial rumen." Four types of systems may be distinguished: (a) those using undiluted or slightly diluted rumen liquor incubated with added substrate in an all-glass impermeable system; (b) those using rumen liquor diluted in half with a mineral solution similar to those minerals found in ruminant saliva and incubated with added substrate in an all-glass impermeable system; (c) those using various fractions of rumen liquor and incubated with added substrate in an all-glass impermeable system; and (d) those using rumen liquor, diluted or not, and incubated with added substrate in a semi-permeable system. In each of these systems physico-chemical conditions are made as similar as possible to **in vivo** conditions (10). There follows a period of incubation at 39° C. and in some cases serial transfers to a second, a third and a fourth run are made before assaying results during which microbial proliferation and concomitant biochemical changes occur. The latter are then assayed in some way to determine, for example, rate of cellulose disappearance (11); production of fatty acids (12); protein nitrogen synthesis (13) and others.

Theoretically, nothing is done in the **in vitro** system that does not occur, as far as is known, **in vivo.** Laudable though this aim may be, it is unfortunately difficult to achieve in practice. If environment, or substrate, or both, are not the same as that found in the rumen (and this may be so in ways we are unaware of, as yet), the changes in bacterial population, and concomitant biochemical alterations, bear little or no relation to **in vivo** conditions. Since proliferation and resulting population selection pressures are complicating issues, it is difficult, if not impossible, to assign definite observed changes to specific microbial groups and **vice versa.** At best, only over-all changes can be described and empirical results noted. Even when changes can be verified to occur **in vivo,** one is no closer to a scientific analysis of them. If artificial rumen is used, a number of criteria of normal function ought to be applied (10). These include: (a) maintenance of numbers and normal appearance of bacteria and protozoa similar to that of the intact rumen; (b) maintenance of normal rates of digestion of cellulose, starch, protein and normal interaction between these; and (c) ability to predict quantitative results **in vivo.** If all these criteria are to be met, it seems likely that artificial rumen systems should be limited to incubation periods of eight hours or less.

The third method used for obtaining information on bacteria of the rumen is that employing

washed suspensions of mixed population. This method has been used with good results by some workers (14, 15, 16, 17). In this technique whole rumen liquor is "differentially centrifuged" to obtain the bacterial fraction. Usual techniques of biochemistry (Warburg, radio-isotopic analysis, paper chromatography, etc.) are then used to study enzymatic capabilities of the mixed "resting cells." It is assumed that enzymes observed **in vitro** are also operative in the rumen, and that one is working with an essentially concentrated, mixed, enzymatically competing population. Enzymes studied thus far include amylase, hydrogenase, urease, and phosphorylase. Aside from cellulase, these are probably the most important microbial enzymes in the rumen. Washed cell suspension method is rapid and growth is not a complicating factor. In addition, simple "one-step" reactions can be studied conveniently; and there is but little activity in the absence of added substrates. On the other hand, not all microbial representatives are present in suspensions, although one could work with protozoan and bacterial mixtures. Some inactivation of certain enzyme systems occurs; and, further, it is difficult to state what species are involved in transformations, except in a physiological sense. The method does not work well with insoluble substrates.

In addition to methods given above, there are certain others which have been used to a lesser extent. These include fluorescent antiserum detection methods (18), stabilized enrichment cultures (19), cell-free enzyme systems (20), and certain **in vivo** methods (21).

Protozoa of the rumen have not been studied except in a rather cursory way. There are possibly two reasons for this lack of attention: (a) the protozoa are much more difficult to isolate and maintain in pure culture; and (b) experiments have shown that defaunated ruminants seem to thrive. Important rumen protozoan genera include **Isotricha** and **Dasytricha** (in the order **Holotricha**), and **Entodinium** in the order **Oligotricha**. Possibly **Ophryoscolex** and some flagellates play a minor role. Whereas numbers of bacteria may reach 10^{10} per gram rumen contents, ciliate protozoa may reach 10^{6} per gram. Important rumen protozoa are anaerobic; and as with bacteria, they seem to be found only in the rumen. They must, therefore, be transferred by direct contact between animals. It is quite likely that although protozoa do not play the primary role in fermentation of carbohydrates in the rumen, they do supply an important part of protein of high biological value (22). Rumen protozoa may be important for one or more of the following reasons: (a) they are of nutritional value to the host; (b) they may be cellulolytic; (c) they may aid in decomposing starch or other carbohydrates; and (d) some of them store starch-like (amylopectin) reserve compounds, which may be of some use in the rumen (23, 24).

Nutrient needs of rumen bacteria . . .

Evidence concerning nutritional requirements of rumen bacteria has been derived almost completely from experiments made on pure cultures and from observations made on various artificial rumen systems.

Observations on pure cultures originally were of the fact that rumen liquor seemed essential in a medium devised for growth of maximal numbers of rumen bacteria (25). Later it was discovered (26) that pure cultures of **Bacteroides succinogenes** required any one of the branched-chain saturated fatty acids—isobutyric, isovaleric or DL-a-methyl-n-butyric—together with a C5 to C8 straight-chain fatty acid when grown in a synthetic medium. This seemed consistent with an earlier observation (27) that **Ruminococcus flavefaciens** grew much better in a medium containing a sterile filtrate of a medium in which **Clostridium sporogenes** had grown. This could be explained on the basis of fatty acid production from animo acids in the medium by the latter organism. Other workers (28) reported that n-valeric, isovaleric, isobutyric and caproic acids, or their amino acid precursors, stimulated cellulose digestion and conversion of urea to protein when measured by an artificial rumen technique. Thus lines of evidence from two different methods seemed to converge. A series of papers was published in which artificial rumen was used to determine effect of various factors on cellulose digestion (29, 30, 31). It was concluded from these studies that unknown factors in soybean oil meal might have a favorable effect on cellulose digestion; and further observations led to finding that distillers' dried solubles and linseed oil meal were also beneficial in this regard. Attempts (32) to evaluate various nonprotein nitrogen compounds as nitrogen sources for rumen microorganisms, using an artificial rumen, have been made. Disappearance of cellulose and fatty acid production were measured. It was found that under conditions of the experiments ammonium succinate or lactate, creatine, creatinine, and salts of guanidine, uric acid and allantoin were utilized as nitrogen sources by rumen bacteria.

Older work (13) showed that a readily available source of energy was essential for conversion of nonprotein nitrogen to microbial protein. Starch, dextrin, maltose, glucose, lactose and several other carbohydrates, were noted to increase the conversion rate. However, it was shown (33) that high levels of carbohydrate decreased cellulose digestion **in vitro**.

Mineral requirements of ruminants may be higher than those of monogastric animals because of the trace metal requirements of rumen microflora. Protein synthesis in an artificial rumen was found to be very poor when iron content was less

TABLE 1

General Characteristics of Some Rumen Bacteria

Genus and Species	Morphology	Oxygen Relations	Possible Rumen Substrate	Possible End-Products
Ruminococcus flavefaciens	Gram + coccus	Anaerobic	Cellulose	Formic, Acetic, Succinic Acids
Streptococcus bovis	Gram + coccus	Fac. Anaerobic	Starch	Lactic Acid
Lactobacillus delbrueckii	Gram + coccus	Fac. Anaerobic	?	?
Veillonella gazogenes	Gram - coccus	Anaerobic	Lactate	Acetic, Propionic, Acids, CO_2
Bacteroides succinogenes	Gram - curved rod	Anaerobic	Cellulose	Acetic, Succinic Acids
Bacteroides amylophilus	Gram - curved rod	Anaerobic	Starch	Formic, Acetic, Succinic Acids
Bacteroides amylogenes	Gram - curved rod	Anaerobic	Xylan	Acetic, Butyric Acids
Butyrivibrio fibrisolvens	Gram - curved rod	Anaerobic	Fiber	Formic, Butyric, Lactic Acids, CO_2, H_2 *
Succinimonas amylolytica	Gram - curved rod	Anaerobic	?	Acetic and Succinic Acids *
Lachnospira multipara	Gram + curved rod	Anaerobic	?	Acetic, Formic, Lactic Acids, CO_2, H_2
Borrelia sp.	Gram - spirochete	Anaerobic	?	Acetic, Succinic Acids, CO_2 *
Propionibacterium acnes	Gram + rod	Fac. Anaerobic	Lactate	Acetic, Propionic Acids, CO_2
Selenomonas ruminantium	Gram - curved rod	Anaerobic	?	Acetic, Propionic, Lactic Acids *
Clostridium butyricum	Gram + rod	Anaerobic	Cellulose	Formic, Acetic, Butyric Acids

than 1 ppm (34). On the other hand, toxic levels of iron, copper, cobalt and molybdenum were reported to be 1,000, 25, 1,000 and 2,000 ppm respectively. It was observed (35) that molasses ash, phosphorus and iron stimulated **in vitro** cellulose decomposition. It has also been reported that cobalt deficient sheep exhibit a marked reduction in types and numbers (36), but this has not been verified.

A great deal remains to be done concerning nutritional requirements of authentic rumen bacteria and effect of deficiencies on over-all rumen function. Quite probably, some vitamin requirements of rumen bacteria are met by others; but nothing is known concerning this. Further, observations on requirements for trace minerals, fatty acids, vitamins, etc., have been made largely with some sort of artificial rumen system; and as pointed out above, only empirical results are obtained with this technique. It is not too pessimistic to state that the bulk of definitive work concerning nutritional requirements of rumen bacteria still lies ahead. From some of the observations made using cultural techniques (37), it appears that a number of authentic rumen bacteria can use simple inorganic nitrogen sources, when these are supplemented by a few amino acids and vitamins.

Some microorganism functions . . .

Important functions of rumen microorganisms include digestion of cellulose, starch, pectin, xylans, pentosans and soluble carbohydrates of the ration; digestion of protein and other nitrogenous compounds of the ration, and synthesis of amino acids and proteins from ammonia; and synthesis of vitamins utilizable by the host, as well as various species of microflora itself.

Ruminants are absolutely dependent upon bacteria for utilization of cellulose, since cellulase is not a mammalian enzyme. After cellulose is hydolyzed to soluble carbohydrates, these are further fermented to short chain fatty acids and gases. The ratio of cellulose to soluble carbohydrate varies in different feedstuffs; and in some root crops the latter may actually exceed the former, thus exposing it to immediate attack by a large portion of the rumen microflora. Principal role in ruminal fermentation of carbohydrates is played by bacteria, and rumen ciliate protozoa are of secondary importance in this regard. A number of **in vitro** experiments have been conducted in which cellulose digestion was the criterion of utilization or requirement of some other factor, namely, urea or other nonprotein nitrogen compound, minerals, various fatty acids and others. It is possible that the first stage in microbial digestion of cellulose is mediated by a depolymerase, in which cellulose is broken down to fragments which may not be soluble, if this is so, then some reinterpretation of results obtained from the above-mentioned technique will have to be made. It is of interest to note that ruminants can thrive on feeds in which cellulose is present in only small quantities. It was found (38) that sheep, fed sea weed (10% cellulose) during winter months, were quite normal. Sea weed is composed of such rare carbohydrates as laminarin, fucoidin, alginic acid and mannitol. Reference to Table 1 shows that important cellulolytic rumen bacteria include members of the genus Bacteroides and a few coccal forms designated as Ruminococcus or "cellulolytic cocci."

Starch of ruminant rations is hydrolyzed by amylase to various soluble carbohydrates. One of the principal organisms involved is **Streptococcus bovis**. Since it is a homofermentative lactic acid coccus, it is evident that its proliferation in the presence of large amounts of starch in the diet would lead to increases in the lactic acid concentration in the rumen and a corresponding drop in pH. Abrupt changes to high grain or glucose concentrations may even lead to sufficient acid production to cause rumen stasis (39). Some rumen protozoa (isotrichs and **Entodinium**) are able to ingest starch particles. Somewhat different from this is the ability of many rumen bacteria and some protozoa to polymerize a variety of soluble carbohydrates to an intracellular storage material that stains blue-purple with iodine (40). The material is an amylopectin-like substance and it appears chemically homogeneous, irrespective of the "species" forming it. It is utilized as an internal reserve carbohydrate by the bacteria forming it (41). On the other hand, a number of rumen microorganisms synthesize capsular materials; and these are chemically heterogeneous.

To summarize: cellulose, hemicelluloses, starch and a variety of soluble carbohydrates enter the rumen. Here they are attacked by rumen microflora and fermentation processes lead to the formation of various fatty acids, gasses and in certain cases external or internal polysaccharide production.

Short-chain fatty acids and lactic acid may be absorbed through the rumen. Material not attacked passes on to abomasum and intestines, together with a small amount of polymerized compounds.

Studies on protein digestion in relation to ruminal microflora have not been nearly as numerous as those dealing with various carbohydrates. In one of the few studies performed (42), using pure culture technique, **Bacillus licheniformis** was found to be the most frequently encountered proteolytic activity (20), and toluene preserved washed suspensions are able to hydrolyze proteins to amino acids. Washed suspensions of rumen bacteria have been found to attack but few of the naturally occurring amino acids (43); but when attacked, fatty acids, CO_2 and NH_3 are the end products. Free amino acids are found in only minute concentrations in rumen fluid.

A large amount of research has been done on transformation of nonprotein nitrogen (chiefly urea) to protein nitrogen by rumen microorganisms. It is a paradox, then, that as yet no authentic urea-hydrolyzing bacterium from the rumen has been described. Nonetheless, the accepted sequence of events seems to be as follows: (a) microbial hydrolysis of urea (under unknown optimal conditions) to ammonia and CO_2; (b) utilization of ammonia to synthesize microbial amino acids (again under unknown optimal conditions); (c) microbial protein is digested in the intestinal tract of the host. The biological value of dried rumen bacteria was found to be 81 with a true digestibility of 74 per cent (44) when determined with rats. Dried rumen protozoa had a biological value of 80 and a true digestibility of 91 per cent.

It has been found that whereas the proteolytic abilities of washed suspensions of rumen bacteria are much the same on a variety of diets, the ability to deaminate specific amino acids seems to vary with the diet (20). It has been suggested (16) that branched-chain fatty acid may arise from the corresponding amino acid via microbial activity.

To summarize: protein, urea, amino acids, ammonia, nitrate, etc., enter the rumen. Here the proteins are hydrolyzed to amino acids, these in turn are absorbed by the rumen microorganisms, or deaminated and decarboxylated with liberation of the corresponding fatty acid. Perhaps a mutual oxidation-reduction between certain pairs of amino acids occurs, yielding keto acids, fatty acids, ammonia and CO_2. (Stickland reaction not proven as yet to occur within the rumen). Ammonia may be absorbed through the rumen or utilized by the microorganisms to synthesize their amino acids and proteins. Nitrate may be reduced to ammonia; and any material not attacked passes on to the abomasum and intestine.

The last function of rumen microorganisms to be considered is their relationship to vitamin synthesis processes. It has been established that thiamine, niacin, pyridoxine, riboflavin, biotin, pantothenic acid, pteroylglutamic acid, cyanocobalamin and vitamin K are synthesized in the rumen (45). Although a readily available carbohydate seems essential for vitamin synthesis, a wide variation in diet does not seem to greatly affect the level of synthesis. In some cases, trace metals (such as cobalt in cyanocobalamin synthesis) are required. It is probable that when the ration is high in vitamin content the effect of the synthesizing organisms is minimal. As in so many areas of rumen microbiology the precise organisms involved and the optimal conditions for their activity are unknown.

Various factors affect organisms . . .

In this section, some of the effects of variations in diet, feeding antibiotics, and isolation conditions of animals will be considered, in so far as they affect the rumen microflora.

The techniques employed in studies involving the above-mentioned factors are far from perfected. One has the choice of measuring gross animal changes (weight gain, efficiency and food conversion, amount of milk produced, etc.) or changes in the rumen of a generalized biochemical nature. In either case, the exact nature of the changes taking place, and the factors involved, somehow escape detection. As stated above, methodology is still primitive in the area of microbial interaction problems.

It has been found that dietary changes affect the chemical composition of rumen liquor, the amount of milk fat produced, and other parameters suggestive of alterations in the physiological (hence microbial) activity of the rumen. It has been stated before that a frequently fatal indigestion could be induced in sheep on a diet of hay by abruptly changing to a diet high in grain or glucose. Cellulolytic bacteria are greatly decreased in numbers, and the rumen contents become quite acid (pH 4.1 to 4.7). **Streptococcus bovis** is involved in this transformation, and it is due to the large amount of lactic acid formed that rumen motility ceases and death ensues. Some investigators (46, 47) have made attempts to distinguish between the microflora of animals on a high roughage diet vs. those on a high grain diet. In general, the former gives a flora of strict anaerobes, which attack fiber and produce butyric acid. In the latter type diet, the flora is composed of facultative anaerobes, which do not attack fiber, and which produce lactic, acetic, and succinic acids. It has been recognized (48) that, with the possible exception of a concentrate ration, the total numbers of bacteria which can be cultured from animals on a variety of diets is roughly the same. However, a more complex

flora (a qualitative difference) is observed when alfalfa hay or alfalfa hay concentrate rations are fed than when concentrates or straw are the major components. Recently (49) it was shown that the fat content of milk could be decreased by 50 per cent when ruminants (cows in this case) were fed a ration composed predominantly of bread. It was found that the rumen liquor of such animals is low in acetic and high in propionic acid. The specific microbiological changes reflected here have yet to be unraveled. It seems reasonable to assume that unless the diet is altered radically, either qualitatively or quantitatively, the usual microflora will perform its functions.

The specific microbiological changes induced by antibiotic feeding are unknown. Contradictory reports on the supposed effects can be found in the literature. It is generally agreed, however, that antibiotic feeding to calves is of great benefit in the prevention of scouring. There are endless studies published concerning weight gains, and the alteration of other factors mentioned above as affected by antibiotics; but definite studies on the bacteriological changes induced are nil. In a recent symposium (50) it was concluded that antibiotic feeding may affect the bacterial flora of the rumen or intestinal tract in several ways: (a) directly affect host metabolism; (b) affect the bacteria of the rumen or gut in some physiological manner; (c) inhibit bacteria which cause clinical or sub-clinical infections. Much work has been done using some form of artificial rumen dosed with an antibiotic, and observing the effects on cellulose digestion. Thus chlortetracycline was shown to decrease cellulose digestion (51) **in vitro** in one study, but have very little effect in another (52). **In vivo** studies (53) utilizing the technique of suspending nylon bags containing cellulose into the rumen show that animals receiving the antibiotic digested the cellulose intraruminally as efficiently as did the control animals. These data suggest that factors involved with **in vitro** digestion are not necessarily the **same as in vivo.**

Top (left): Bacteroides succinogenes, a lactate fermenting anaerobe.

Lower (right): Selenomonas ruminantium, a lactate and carbohydrate fermenting anaerobe.

Work with oxytetracycline has been conducted in the above manner (54) and in additional trials have been conducted wherein animals were fed or dosed with this antibiotic and then the artificial rumen was used as a tool to evaluate the effect on the rumen flora activity (55). With both types of studies with this antibiotic it was apparent that there was an initial period of inhibition of cellulolytic activity but that this is overcome as the exposure of the flora is continued. Obviously, many other uncontrolled factors were involved that make direct comparison of the two studies impossible. It has been reported (56) that the concentration of the ten essential amino acids in the rumen was less when chlortetracycline was fed. The few tentative studies involving rumen samples, and observations on certain "indicator" organisms therein have yielded nothing of value concerning effects of antibiotics. Curiously enough, there does not appear to be a great deal of natural antagonism among rumen bacteria when cultured in low dilutions. This is, of course, quite the reverse of the situation in the soil; and it is taken to indicate that the rumen microflora is well adapted to the environment, and the antibiotic-producing competitors have long since been eliminated, leaving the rumen an essentially "liquid organ" whose tissue is composed of the cells of the microflora. Antibiotic inactivating enzymes have not been shown to be formed by rumen microorganisms (57).

There is a definite sequence in the establishment of the different kinds of protozoa in the rumen of growing calves (58). Calves one week of age may contain flagellates, but if they are kept in isolation (away from mature animals), the Entodinium, Diplodinium, and holotrichs are not introduced. The predominant kinds of bacteria are different in week old calves from those of older animals. Surprisingly, even in isolated conditions, many of the kinds of bacteria typical of mature animals may become established. In fact, there were found about 10^9 cellulolytic bacterial per gram of rumen contents in week old calves in the above study. There appears to be no advantage in the practice of "cud inoculation." Weight gains, general appearance and TDN consumed per pound of gain in inoculated calves were found not in any way superior to those of uninoculated (isolated) calves (59). Some workers (60) have shown that calves inoculated with cud material, and fed high roughage rations, digest cellulose better than uninoculated calves. It is evident that although protozoa are introduced into the rumen flora of calves in contact with mature animals, or inoculated with cud, no definite advantages accrue from this.

Relation of bacteria to rumen dysfunction . . .

Rumen bacteria appear to be implicated in some metabolic disorders of ruminant animals referable to the rumen itself. Among these disorders are "lactacidemia," urea and casein poisoning, production of toxic materials in the rumen such as nitrite and hydrocyanic acid, lack of synthesis due to trace metal deficiencies, bloat and possibly ketosis.

The production of lactic acid in the rumen has been referred to above. It appears that when sheep are fed 75 to 80 gm. wheat per kg. body weight, a rapid accumulation of lactic acid (due to the growth of **Streptococcus bovis**) occurs in the rumen, accompanied by a drop in ruminal pH; this, in turn, is followed by a sudden rise in the lactate concentration of the peripheral blood or a "lactacidemia" (61). It does not seem likely that **Streptococcus bovis** produces a toxin or toxin substances and, whereas the lactic acid concentration causes rumen stasis, it is not involved in other symptoms. It has been suggested (61) that feeding large amounts of starch or glucose and the subsequent development of lactic acid bacteria, would possibly lead to: (a) that production of toxic amin (62); (b) dehydration; (c) damage to the rumen epithelium; and (d) permanent alteration of the flora if the animal were isolated.

The sudden introduction of urea into a ration, or feeding excessive amounts of casein, may cause death in ruminant animals. In both cases, excessive amounts of ammonia are liberated into the rumen. One cannot say with certainty that ammonia, as such, is the cause of death. It is certain that the ammonia results from the activity of the microflora on the urea or casein. Ammonia is liberated in the rumen from casein or gelatine much more rapidly than from zein. It is likely that the effect of alkalinity in the rumen is deep-seated, rather than peripheral and perhaps depends upon the acid-base equilibrium of the blood.

There is direct evidence of the conversion of nitrate to ammonia in the rumen (63). It is probable that nitrite and hydroxylamine are intermediates in this reduction. If large amounts of nitrate are present in the ration, there may be an accumulation of nitrite in the rumen, with absorption and toxic effects. It has been found (64) that **Tribulus terrestris** is a toxic plant for sheep at only certain times of the year. During these times, there are large concentrations of potassium nitrate in the plant. The nitrate is reduced by the rumen microflora to nitrite, and upon absorption causes a methemoglobinemia. It was shown (15), using washed suspensions of rumen bacteria, that hydrogen is a very active donor for the reduction of nitrate, nitrite and hydroxylamine. Formate, succinate, lactate, citrate, glucose, malate and mannitol are also hydrogen donators for nitrate reduction, but less active than hydrogen itself. Sulfate reduction also occurs in the rumen, but at a much slower rate than nitrate reduction. It has been assumed that grazing sheep eat about 3 gm. sulfate sulfur per day or the equivalent of 30 gm. of hydrated sodium sulfate. No toxic effects have been noted after administering 150 gm. of this compound to sheep (65).

White clover contains the glucoside lotaustralin. This compound may be hydrolyzed by rumen microorganisms with the production of hydrocyanic acid. The latter can then be absorbed from the rumen and thus poison the animal. Such poisoning is apparently commonly brought about by plants (66) and clovers (67).

"Pining" in young sheep and cattle occurs in cobalt-deficient areas. Since there is a cobalt deficiency, the rumen microorganisms are unable to synthesize vitamin B_{12}, and the resulting "pining" syndrome occurs in the dependent host. It has been reported (36) above that the rumen flora is changed in cobalt deficiency and it is possible that this prevents the synthesis of factors required by certain other members of the rumen microflora. Oral administration of cobalt or B_{12} injection has been found to generally alleviate "pining" symptoms.

The elements involved in the etiology of bloat are complex and difficult to unravel. If the production of a stable foam is involved it may include factors from the saliva, bacteria and feedstuffs. At any rate, bloat occurs whenever there is interference with the elimination of fermentation gases from the rumen. There are a number of theories concerning the cause of bloat, and definitive microbiological investigations seem to be sorely needed. Pure cultural studies (68) on the numbers and predominant types of bacteria cultured from bloating and nonbloating and penicillin-treated cattle have shown that the flora of these groups were not different in any significant way. Another investigation (69) revealed that the percentage of encapsulated microorganisms was correlated with the degree of bloat observed. Finally, a study (70) on the rate of fermentation per gram ingesta in bloated animals was shown to be significantly higher than in unbloated animals grazing on the same pasture; but the proportions of acid, methane and carbon dioxide were similar in the two groups.

There seems to be no direct cause and effect relationship between ketosis and the rumen microflora. However, as shown above, some dietary changes may affect the amount or ratio of volatile fatty acids in the rumen. If it becomes possible to control these factors by discovering the nature of the substrates required for their production, it might be feasible to control ketosis. The ruminal production of fatty acids (acetic and propionic have been helpful in some cases) would be more practical than oral administration (71). As yet, it has not been shown that there is a decrease in the production of propionic, acetic or butyric acid prior to the onset of ketosis.

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1. H. Tappeiner, Zeitschrift fur Biologie, 20:52, 1884.
2. A. E. Oxford, Journal of the Science of Food and Agriculture, 6:413, 1955.
3. N. Zuntz, Pfluger's Archiv fur die gesamte Physiologie, 49: 477, 1891.
4. A. Theiler, H. H. Green, P. R. Viljoen, Union of South Africa Department of Agriculture, Report of the Director of Veterinary Services and Animal Industry, Onderstepoort, 3, 4:9, 1915.
5. R. N. Doetsch, Journal of Dairy Science, 40:1204, 1957.
6. R. E. Hungate, Journal of Bacteriology, 48:499, 1944.
7. R. E. Hungate, Bacteriological Reviews, 14:1, 1950.
8. M. P. Bryant and R. N. Doetsch, Journal of Dairy Science, 37:1176, 1954.
9. M. P. Bryant and N. Small, Journal of Bacteriology, 72:22, 1956.
10. A. C. I. Warner, Journal of General Microbiology, 14:733, 1956.
11. E. W. Cheng, G. Hall and W. Burroughs, Journal of Dairy Science, 38:1225, 1955.
12. I. J. Belasco, Journal of Animal Science, 13:748, 1954.
13. M. L. McNaught, Biochemical Journal, 49:325, 1951.
14. A. K. Slipestei[n and S. R. Elsden, Biochemical Journal, 52:41, 1952.
15. D. Lewis, Biochemical Journal, 49:149, 1951.
16. K. El-Shazly, Biochemical Journal, 51:647, 1952.
17. R. N. Doetsch, R. Q. Robinson, R. E. Brown and J. C. Shaw, Journal of Dairy Science, 36:825, 1953.
18. P. N. Hobson and S. O. Mann, Journal of General Microbiology, 16:463, 1957.
19. R. A. Oppermann, W. O. Nelson and R. E. Brown, Journal of Dairy Science, 40:779, 1957.
20. A. C. I. Warner, Journal of General Microbiology, 14:749, 1956.
21. S. Hoflund, J. I. Quin and R. Clark, Onderstepoort Journal of Veterinary Science and Animal Industry, 23:395, 1948.
22. M. L. McNaught, J. A. B. Smith, K. M. Henry and S. K. Kon, Biochemical Journal, 46:32, 1950.
23. A. E. Oxford, Experimental Parasitology, 4:549, 1955.
24. R. E. Hungate, Biochemistry and Physiology of Protozoa, 1:159, 1955.
25. R. N. Doetsch, R. Q. Robinson and J. C. Shaw, Journal of Animal Science, 11:536, 1952.
26. M. P. Bryant and R. N. Doetsch, Journal of Dairy Science, 38:340, 1955.
27. A. K. Slipestei[n, Journal of General Microbiology, 5:869, 1951.
28. O. G. Bentley, R. R. Johnson, T. V. Hershberger, J. H. Cline and A. L. Moxin, Journal of Nutrition, 57:389, 1955.
29. W. Burroughs, M. A. Frank, P. Gerlaugh and R. M. Bethke, Journal of Nutrition, 40:9, 1950.
30. W. Burroughs, L. S. Gall, P. Gerlaugh and R. M. Bethke, Journal of Animal Science, 9:214, 1950.
31. W. Burroughs, N. G. Headley, R. M. Bethke and P. Gerlaugh, Journal of Animal Science, 9:513, 1950.
32. I. J. Belasco, Journal of Animal Science, 13:691, 196.
33. C. Arias, W. Burroughs, P. Gerlaugh and R. M. Bethke, Journal of Animal Science, 10:683, 1951.
34. M. L. McNaught, E. C. Owen and J. A. B. Smith, Biochemical Journal, 46:36, 1950.
35. W. Burroughs, A. Latone, P. DePaul, P. Gerlaugh and R. M. Bethke, Journal of Animal Science, 10:693, 1951.
36. L. S. Gall, S. E. Smith, C. N. Stark, D. E. Becker and J. K. Loosli, Science, 109:468, 1949.
37. J. J. Gilroy and F. G. Hueter, Maryland Agricultural Experiment Station Miscellaneous Publication No. 291:4, 1957.
38. A. E. Oxford Collected Papers of the Rowett Research Institute, 12:35, 1956.
39. R. E. Hungate, R. W. Dougherty, M. P. Bryant and R. M. Cello, Cornell Veterinarian, 42:423, 1952.
40. R. J. Gibbons, R. N. Doetsch and J. C. Shaw, Journal of Dairy Science, 38:1147, 1955.
41. R. N. Doetsch, B. H. Howard, S. O. Mann and A. E. Oxford, Journal of General Microbiology, 16:156, 1957.
42. J. C. Appleby, Journal of General Microbiology, 12:526, 1955.
43. F. M. Sirotnak, R. N. Doetsch, R. E. Brown and J. C. Shaw, Journal of Dairy Science, 36:1117, 1953.
44. M. L. McNaught, J. A. B. Smith, K. M. Henry and S. K. Kon, Biochemical Journal, 46:32, 1950.
45. S. K. Kon and J. W. G. Porter, Vitamins and Hormones, 12:53, 1954.
46. L. R. Maki and E. M. Foster, Journal of Dairy Science, 40:905, 1957.
47. H. E. Bauman and E. M. Foster, Journal of Bacteriology, 71:333, 1956.
48. M. P. Bryant and L. A. Burkey, Journal of Dairy Science, 36:218, 1953.
49. J. C. Shaw, R. R. Robinson, M. E. Senger, E. C. Laffal, R. N. Doetsch, T. R. Lewis and W. H. Brown, Maryland Agricultural Experiment Station Miscellaneous Publication No. 291:16, 1957.
50. E. Froerksen, First International Conference on Antibiotics in Agriculture, National Research Council Publication, 397: 91, 1956.
51. M. R. Lambert and N. L. Jacobson, Journal of Animal Science, 15:509, 1956.
52. C. M. Chance, C. F. Huffman and C. W. Duncan, Journal of Dairy Science, 36:253, 1953.
53. M. R. Lambert and N. L. Jacobson, Journal of Dairy Science, 40:633, 1957.
54. W. B. Hardie, H. E. Downing, W. M. Reynolds, H. G. Luther, Antibiotics Annual, pp. 372-379, 1953-54.
55. W. B. Hardie, C. R. Adams, W. M. Reynolds, H. G. Luther, Paper presented American Chemical Society meeting, Minneapolis, Minn., 1955.
56. C. M. Chance, C. W. Duncan, C. F. Huffman and R. W. Luecke, Journal of Dairy Science, 36:495, 1953.
57. P. Jurtshuk, R. N. Doetsch, J. J. McNeill and J. C. Shaw, Journal of Dairy Science, 37:1466, 1954.
58. M. P. Bryant, N. Small and L. A. Burkey, U. S. Department of Agriculture, Agricultural Research Service, 52:13, 1955.
59. M. P. Bryant and N. Small, U. S. Department of Agriculture, Agricultural Research Service, 52:31, 1956.
60. H. R. Conrad, J. W. Hibbs, W. D. Pounden and T. S. Sutton, Journal of Dairy Science, 33:585, 1950.
61. A. T. Phillipson, Advances in Veterinary Science, 2:212, 1955.
62. R. W. Dougherty, American Journal of Veterinary Research, 3:401, 1942.
63. D. Lewis, Biochemical Journal, 48:175, 1951.
64. J. I. Quin, Annual Report of the Director of Veterinary Sciences Onderstepoort, 16:413, 1930.
65. D. Lewis, Biochemical Journal, 56:391, 1954.
66. S. J. van der Wath, Onderstepoort Journal of Veterinary Science and Animal Industry, 19:79, 1944.
67. I. E. Coop and R. L. Blakeley, New Zealand Journal of Science and Technology, 30:277, 1949.
68. M. P. Bryant, E. F. Barrentine, C. B. Shawver and L. W. Williams, Rumen Conference Function Papers, 1957.
69. D. R. Jacobsen, I. L. Lindahl, J. J. McNeill, J. C. Shaw, R. N. Doetsch and R. E. Davis, Journal of Animal Science, 16:515, 1957.
70. R. E. Hungate, D. W. Fletcher, R. W. Dougherty and E. F. Barrentine, Applied Microbiology, 3:161, 1955.
71. J. C. Shaw, Advances in Veterinary Science, 2:262, 1955.

The Manager—Key Man in the Profit Performance of the Feed and Farm Supply Business

By EMMET J. HOFFMAN
Feedstuffs Staff

Over-all profit performance is the most realistic method of judging the success of a feed and farm supply business. The key man in seeing that the business performs profitably is the manager. He is all-important to his business.

The manager's job is to plan (make decisions), direct (men and business functions) and control (supervise the whole operation). If the manager fails in any one of these three areas, his business is threatened also by failure.

Dun & Bradstreet, Inc., has made a detailed study on the 14,964 business failures reported for the year 1958. This firm sends its representatives to interview principals of the businesses that fail and bankers and other businessmen located in the same cities to get an objective report on every business failure.

The bulk of the failures—13,772 or 92%—were the fault of management. Here's the way the figures line up:

	No.	%
Management incompetence	6,601	44.1
Unbalanced experience	2,780	18.6
Lack of managerial experience	2,545	17.0
Lack of experience in the line	1,846	12.3
	13,772	92.0

This group of 13,772 failures was further analyzed as follows by the surface causes, or the reasons given as excuses, for failure:

	No.	%
Inadequate sales	7,817	52.2
Competitive weakness	3,162	21.1
Receivables difficulty	1,597	10.7
Inventory difficulties	1,219	8.1
Excessive fixed assets	1,121	7.5
Heavy operating expenses	784	5.2
Poor location	400	2.7
Other	642	4.3
	16,742	

(Because some failures in this analysis were attributed to a combination of apparent causes, the figures add up slightly more than the 92% of the failures analyzed.)

It is obvious, therefore, that successful feed and farm supply operation does not just happen—it is the result of good planning, good direction and good supervision by the manager. Management shortcomings, on the other hand, are apparent in nine out of ten business failures.

Observations of farm supply business operations across the U.S. readily indicate that there are about a dozen major problems or difficulties confronting managers. Among the problems and obstacles to more sales and profits are:

1. Uneconomic pricing.
2. Shoddy housekeeping.
3. Lack of aggressive merchandising policy.

EDITOR'S NOTE: The accompanying article is from a talk given by Mr. Hoffman at a Vigorena dealer service training meeting held by Springfield (Minn.) Milling Corp. Mr. Hoffman is editor of Farm Store Merchandising, which, like Feedstuffs, is published by The Miller Publishing Co.

UNECONOMIC PRICING—Inadequate profit margins are hampering the progress of many feed and farm supply businesses. Most feed men will admit that costs have risen 5% in each of the past three years or more. Assuming that this is true in your case, have you raised your prices accordingly to cover these added costs?

Avoid price cutting situation. Have you ever gotten extra business and kept it as a result of cutting prices? Price-cutting may attract the price shopper, but the price shopper will go elsewhere if he can find a lower price or another dealer who will "horse trade."

At the Elevator and Farm Supply Managers Workshop at Iowa State University, the custom milling operation of a feed and grain firm in Iowa was examined. In the fiscal year ended June 30, 1958, this firm charged 10¢ cwt. for grinding, mixing and delivery of feed. This price was charged to meet local competition. The custom mill department lost $5,371 during the year. About 2,200 tons (equivalent in complete feeds) was milled.

The company management estimates that 22¢ cwt. was the break-even point for custom grinding and mixing service, provided volume and expenses remained the same. This is not to suggest that 22¢ cwt. be charged. But here is evidence that the price being charged was too low and uneconomic. The firm since has raised its prices to: 10¢ cwt. grinding, 5¢ cwt. mixing, 5¢ cwt. delivery with a $2 minimum charge.

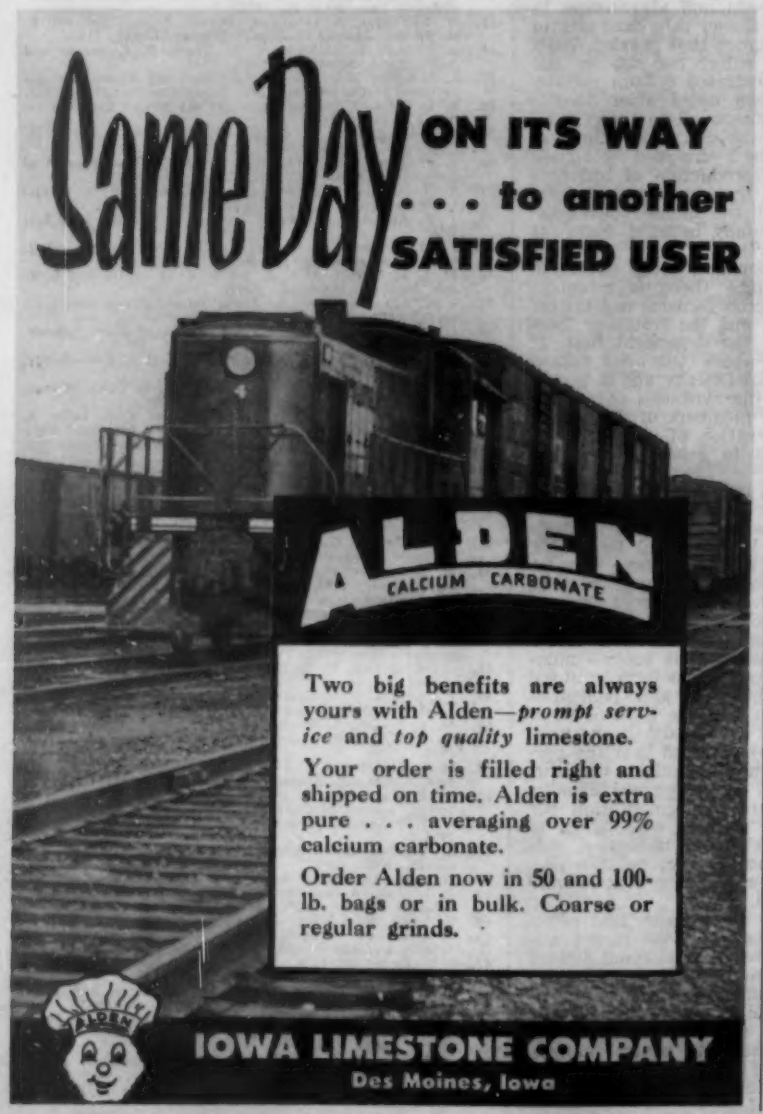
Despite the low prices charged for custom grinding and mixing, the firm found that custom milling was responsible for bringing in an additional net income of $6,334 in three other departments: Grain merchandising and grain services; feed; and related farm supplies. In other words, the custom milling department enabled the entire operation to end the year in the black, with a total net income of $4,103.

Looking at the problem in another way, by eliminating the custom milling department—even though it operated in the red—it would have been impossible for the firm to operate at a profit.

It is true of most custom mill operations that the same equipment and labor could often be used to double the current complete feed output. Expenses, however, would not double because most of the additional costs would be for power.

A company with 50 country ele-

(Turn to page 44)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FARM SURVEY

This firm would like to give you more and better service. To do so, we need your cooperation in filling out this form. Your answers will be kept in strictest confidence. The information summarized from all survey returns will be used as a guide for improving our service.

Name ..... Route ..... Box ..... City .....

Township ..... Age: 20-30 ....., 30-40 ....., 40-50 ....., 50 and over .....

In what town do you do most of your shopping? ..... What do you like most about this town? .....

What would improve shopping in this town? .....

How many acres do you own? ..... Rent? ..... Total acres tillable? .....

How many acres of feed grains do you plant each year? ..... What percentage of feed grains do you feed? ..... Sell? .....

Livestock	Number	Will Expand By	Will Reduce By
Hogs marketed per year	.....	.....	.....
Sows on farm	.....	.....	.....
Milk cows	.....	.....	.....
Beef cattle marketed yearly	.....	.....	.....
Sheep marketed yearly	.....	.....	.....
Laying hens	.....	.....	.....
Broilers marketed yearly	.....	.....	.....
Turkeys marketed yearly	.....	.....	.....

From what dealer do you usually buy:
Feed ..... Livestock equipment .....
Dry fertilizer ..... Poultry Equipment .....
Liquid fertilizer ..... Fencing .....
Pesticides ..... Farm and garden tools .....
Seed corn ..... Field seeds .....
Animal health products .....

To which firm do you usually sell your: Grain? .....
Livestock? ..... Eggs? ..... Turkeys? .....

What local advertising causes you to buy most often? (Rank them 1, 2, 3, 4)
Newspaper ..... Direct mail ..... Radio ..... TV .....

Where do you get most of your information about feed, fertilizer, etc.?
Dealer? ..... County agent? ..... Farm papers? ..... Neighbors? .....

How many feed and farm supply dealers (or their salesmen) call on you? ....
Is your dealer's service good? ..... Fair? ..... Poor? .....
Are your dealer's products good? ..... Fair? ..... Poor? .....

Do you use grinding and mixing service? ..... Portable grinding?..... Portable mixing?.....
Have you ever used portable service? ..... Do you plan to? .....
Do you do your own grinding? ..... Mixing? ..... Have them done in town? .....

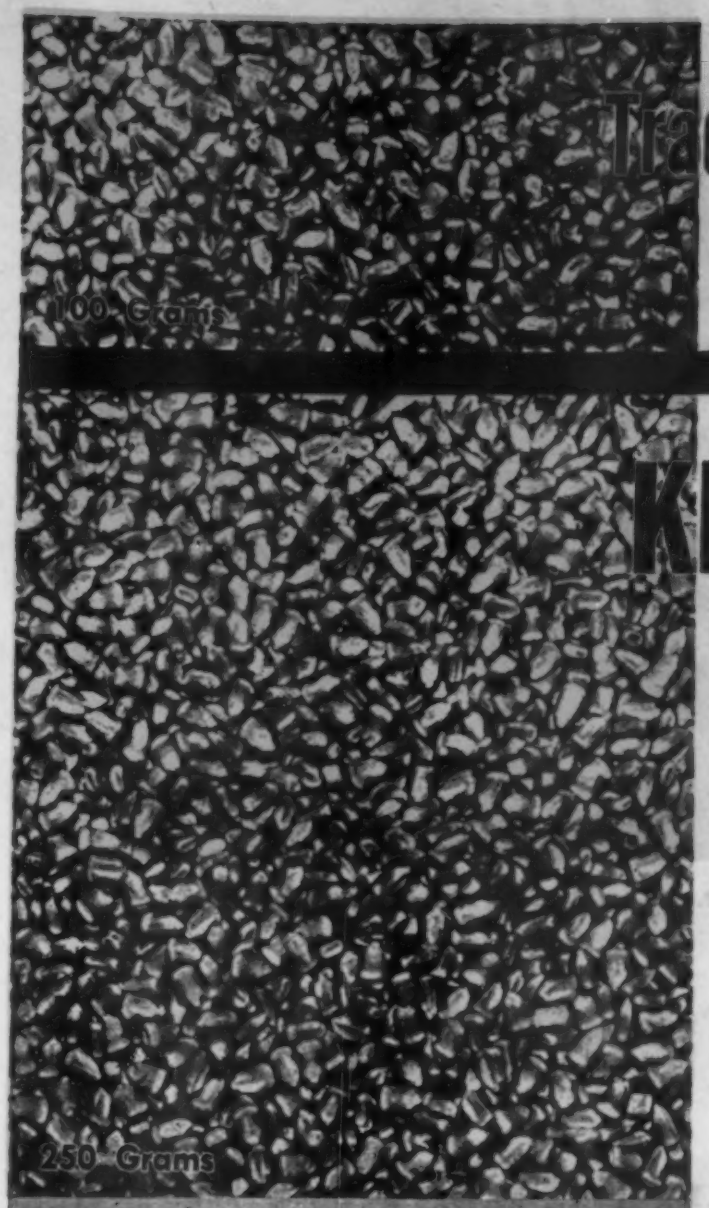
Can you take feed in bulk? ..... If not, do you plan to add bulk facilities soon? ..... Are you familiar with the grain bank? ..... Do you plan to use it? .....

Do you fertilize your pasture? ..... Do you plan to next year? ..... Do you ration pasture grazing (ration-a-day grazing)? .....

What new products or services would you like to have us add? .....

How do you think we can improve our operation? .....

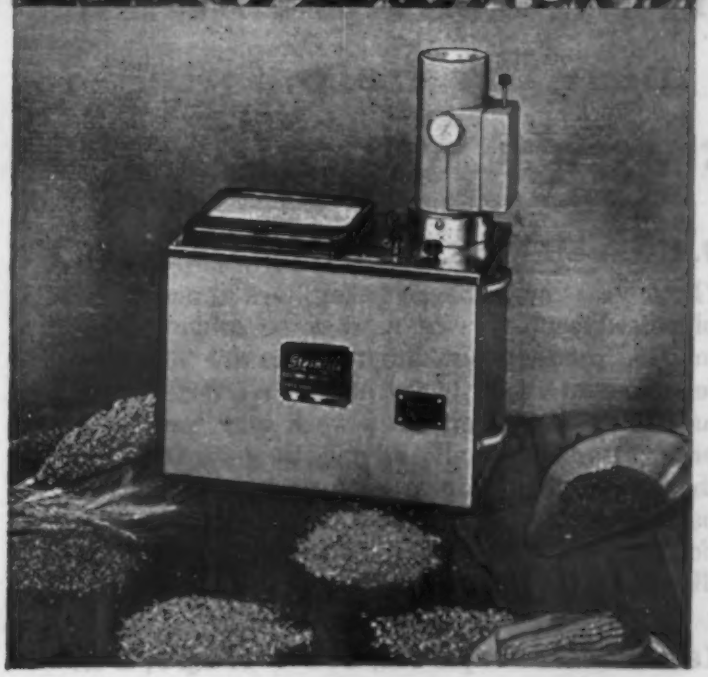
Reprinted from FARM STORE MERCHANDISING



Trade small samples like this for this more accurate KING-SIZE SAMPLE

trade up to reliable moisture testing . . . trade for the

Steinlite · 500-RC



For years the standard of the grain trade, Steinlite moisture testers are more widely used than all other makes of testers combined. It didn't just happen that way . . . years of research and improvement have been invested in every Steinlite model.

And now the new 500-RC with the new king-size sample tops them all! Here's how the Steinlite 500-RC gives you more of everything you need for better moisture testing:

NEW KING-SIZE SAMPLE—Now you get a better, more representative test of the entire load with the big new 250-gram sample. Nothing to grind . . . retest the sample easily or return it to the load totally undamaged.

INSTANT ACCURACY—Make perfect tests of grain right from the drier or samples of mixed moisture content in seconds . . . no need to wait hours for moisture equalization.

FAST, EASY OPERATION—No chance for human error, you just drop the sample in the test cell, and check the automatic meter reading . . . no buttons to push, no dials to adjust. One scale for all moisture ranges.

IMPROVED FEATURES—New, large 9-inch meter . . . easy-to-read, built-in, eye-level thermometer . . . new round funnel with automatic reset . . . redesigned circuit with overlap elimination.

GUARANTEED PERFORMANCE—Your new Steinlite 500-RC is furnished with a full year's factory guarantee and free loaner service is provided for the life of the Steinlite. You're assured of having topnotch moisture testing facilities at all times.

Protect your grain profits with the most accurate moisture testing possible. See your Seedburo representative or write us for complete information on the Steinlite 500-RC and the generous trade-in allowances being offered for your present equipment.

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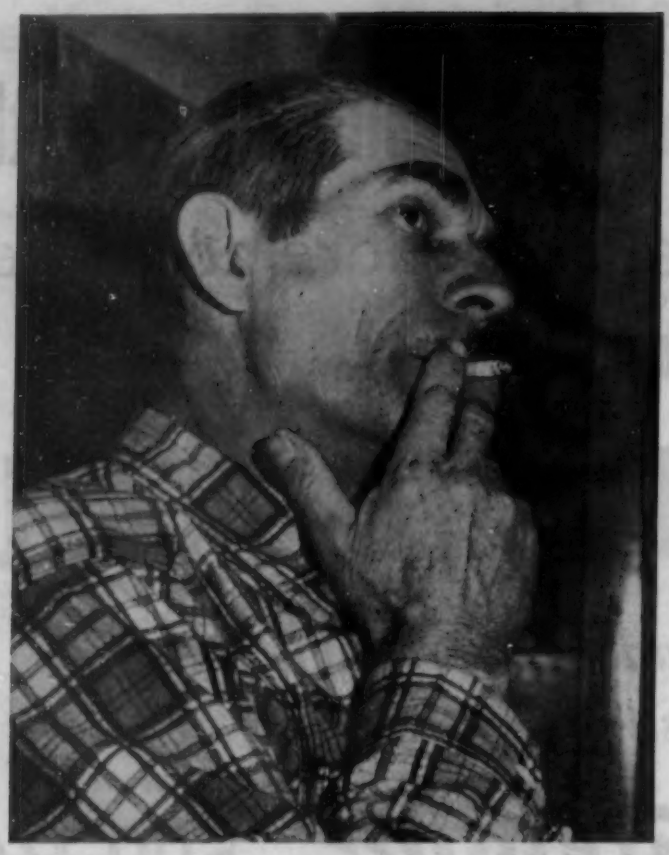
(SEED TRADE REPORTING BUREAU)

EQUIPMENT COMPANY

Dept. FS-9, 618 W. Jackson Blvd., Chicago 6, Ill.



1. *"Production usually dropped in hot weather."*

2. *"I had to have higher hatchability."*

"I needed help . . . and my feed

Meet four men with four different problems. Each turned to his feed man for help. Each got fast, satisfying action with nf-180.

The four men above are a lot like thousands of others who have gone to their feed company with a problem . . . and received help in the form of an nf-180 medicated feed. The result in each case is a satisfied, loyal customer. Here are four examples of how nf-180 does the job:

1. Ralph Jaroch, Waukesha, Wis.

"Four weeks after caging my pullets they were in about 20% production. I tested nf-180 by feeding it to 418 birds in one row. Two weeks later they had jumped from 138 to 358 eggs a day. And they averaged 75% production right through the 5 hot summer months when I usually had a drop in production. I'm through monkeying around . . . now, I give all my birds feed with nf-180 in it."

2. Robert Keller, Nottingham, Pa.

"I produce around 1150 dozen hatching eggs a week. So steady production and high hatchability are important. After testing nf-180, I switched entirely to it. And the last three hatches of my eggs came off at 87% . . . which paid me a bonus of $172.00 in one month. I also like the steadier production that nf-180 gives. I think nf-180 really does the job."

3. J. Russell McKarns, West Unity, O.

"Four years ago I began losing hogs to necro and bloody dysentery. We used some other recommended products but didn't get results. Then my feed company said to try nf-180. We tested it on half the sick pigs and in a week they were back pretty near to normal. And once they were treated, they didn't come down with scours again. If it hadn't been for nf-180, we'd have been out of the hog business. But with nf-180, we can control the disease. I'm mighty high on nf-180."

4. Ian S. Thompson, New Hope, Pa.

"In these days of keen competition and awful egg prices, every avenue must be employed to hold up production and cut costs. And I honestly think that if you are anxious to make out in the business, you have to have nf-180. It's cut my mortality to the lowest ever. My feed conversion is running 3.5 lbs. to a dozen eggs. And at the end of 14 months of lay, when I'm scheduled to sell out the old birds, I'm still getting 60-65% production. Now, I plan to change my replacement schedule and keep my birds an extra 4 to 6 weeks."

3. *"Scours were driving me out of the hog business."*

4. *"I wanted increased production, lower costs."*

company furnished it with nf-180"

Feed company research shows nf-180 even surpasses our claims

These four men are just a sample of the thousands who have switched to nf-180 . . . often after doing their own private testing beforehand.

Several major feed companies have tested nf-180, too. One company with extensive research farm facilities found in making its own comparisons that results considerably exceeded the conservative claims which have been made by Hess & Clark. As a result, that company now includes an nf-180 medicated layer ration in its line of feeds. (Many other feed manufacturers also regularly produce and sell nf-180 medicated feeds for poultry and swine.)

You can promise these benefits on your own feed tags

With nf-180, you can make your feed tags more than a routine listing of ingredients. Actually, nf-180 can turn your feed tag into one of your most effective sales tools. Why? Look at the benefits you can promise when nf-180 is in the feed:

Layers (continuous low level): Increase egg production, improve feed-egg ratio, extend egg-laying period, maintain greater laying performance during stress, improve hatchability, and increase production in the early laying period.

Swine: Treat necro (bacterial enteritis, necrotic enteritis, black scours) and vibrionic (bloody) dysentery.

Booster feeds: The nf-180 label carries more poultry disease prevention, treatment, and control uses than any other feed medication today.

Red Foley

Hess & Clark's No. 1 Salesman

Today more of your customers know about nf-180 than ever before. Word-of-mouth advertising by satisfied users is part of it . . . factual reports from men like the four above are published regularly by Hess & Clark in leading magazines to spread the nf-180 story. And every week on the 140-station NBC Monitor network Red Foley carries nf-180 news to millions of listeners. Many of Red's fans are city folks, incidentally, and this year Hess & Clark is using this popular show to launch a new 'Golden Goodness of Eggs' campaign to help sell the eggs *your* customers produce. We hope you'll listen to the show . . . and remind your customers to enjoy it, too . . . 15 minutes of top entertainment every weekend.

We also urge you to get the full facts on nf-180 medicated feeds and how they can be of service to you. Write or wire us . . . or ask your Hess & Clark salesman for new information which he can supply.

HESS & CLARK

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DIVISION OF VICK CHEMICAL CO.

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vator operations having custom milling service reports that a $10 a ton gross margin on complete feeds is about average. However, there are local feed manufacturers who are getting as high as 18.9% gross margin on their feed operation.

This same company has determined that each of its operations needs about $10,000 in gross revenue annually from the custom mill department before it begins to pay off in profits.

An examination of various operational experiences suggests that many feed and farm supply businesses could improve their gross margins by (1) raising the margins on concentrates, (2) reducing per-ton custom milling costs and (3) cutting delivery costs..

SHODDY HOUSEKEEPING — In recent years, there has been a distinct trend in many areas toward diversification of lines handled by country elevators, hatcheries, feed stores and seed dealers. These firms —which might be classed as farm supply businesses or, in short, farm stores—have diversified for a number of reasons such as: (1) Widening the profit base, (2) feeds help sell related lines and vice versa and (3) the farmer likes to do business with a dealer that can supply his feed, fertilizer, farm chemicals, seeds, twine, salt, health products, poultry and livestock equipment and related supplies at one time.

The advantages of selling related lines are:

a. Sales costs increase relatively little.

b. Off-season sales are increased.

c. Most farm supplies are not perishable.

d. A fairly satisfactory and stable margin is possible.

e. Most related products are less bulky per dollar value than feeds.

f. They help the farmer make more money.

g. Many items are not vulnerable to price cutting.

Here is a comparison of margins that a group of Iowa dealers maintained in four different lines:

	Mixed feeds %	Fertilizer %	Farm seeds %	Farm chemicals %
Over-all average	12½	10	11½	20
Average of lowest 10%	9¼	7½	8	10½
Average of highest 10%	18½	15½	17	30
Most common	12	10	11	22½

The dealer's margin here is based on the retail price, not the wholesale price. In other words, a retail margin of 20% means that the dealer's markup was 20% of his selling price, not 20% of his cost.

The above example shows that farm chemicals carry a satisfactory profit margin compared with the other three lines handled.

New lines mean new merchandising responsibilities. The principles of good merchandising apply to the farm supply business as well as to the drug store or grocery store.

One of the major handicaps to more sales of related farm supplies is shoddy housekeeping. Yet, a good housekeeping program is simple and relatively inexpensive to establish.

Case History

Here is a case history of a country elevator housekeeping improvement program. Fifty country elevators of one live company were involved. The program consisted mainly of painting, cleaning up, cleaning out and moving a few walls and fixtures around. Average expenditures per elevator ranged from $100 to $200. The sales results amazed the managers: Sales of related lines went up in one year from a minimum of 20% in some businesses to 40% for many others. This same result could be achieved by many other operations.

In this connection, it might be worthwhile for managers to hire a bright young high school student who can work part time. He could be assigned to the job of keeping the retail area clean, washing windows, dusting, sprucing up the grounds around your business, painting, and if he is artistically inclined, assign to him the job of painting in-store signs, price-tagging merchandise and arranging displays and shelf merchandise.

All evidence indicates that the farmer is as much impressed with an attractive looking farm supply business as the housewife is when she walks into a neat, progressive appearing super market. There is absolutely no evidence to show that fertilizer pouring out from a broken bag on the floor makes the farmer feel at home. To the contrary, this might make him believe that the business is run by a careless and incompetent manager.

LACK OF AGGRESSIVE SELLING POLICY—Part of the manager's job is to plan an aggressive selling program. This program will work most successfully if planned a year ahead or, at the least, six months ahead.

Among the techniques employed by

(Turn to MANAGER, page 106)

BROILER PRODUCTION IN ENGLAND UP 30%

LONDON—England now is raising broilers at an annual rate of 50 million birds, or about 30% above the 1958 figure, according to a recent report. British growers, using American methods, have found they can turn a good profit and still charge a moderate price, the report stated.

Here's what we are telling your customers about

THE IMPORTANCE OF VITAMIN D NUTRITION

In this educational series to farmers and feeders, Dr. G. C. Wallis answers important questions about Vitamin D Nutrition.

Dr. Wallis answers your questions about...

vitamin D nutrition

q: Is there a new recommendation for the amount of vitamin D to be fed for preventing milk fever?

a: Yes, on the basis of recent work, the Ohio Agricultural Experiment Station now recommends 20,000,000 units of vitamin D_2 per day for five to seven days before freshening. This is two-thirds of the previous recommendation. Now milk fever prevention costs even less than before.

q: Can I depend upon good sun-cured hay to supply enough vitamin D for my livestock?

a: Definitely not. Contrary to what is often assumed, the amount of sunshine received in curing does not provide a reliable basis for judging vitamin D content. Some sun-cured hay is even lower in vitamin D than artificially dried hay.

q: I have a herd of good producing dairy cows. How much vitamin D do they need?

a: Experimental evidence on vitamin D requirements is limited to work for less than a year on five or six cows in moderate to low milk production. Obviously, this is not enough to give reliable information for high-level performance on a long time basis. Based on accumulating evidence on vitamin D needs, more feed manufacturers are increasing fortification of complete dairy rations to 4,000 - 8,000 units of vitamin D per pound. As an example, when fed at the rate of 10 pounds per day, a cow would get 40,000 - 80,000 units of vitamin D daily.

q: My brood sows are getting a lot of sun-cured alfalfa hay. Will that take care of their vitamin D needs?

a: Not necessarily. One-third of twelve sun-cured alfalfa hay samples included in a recent report would have contributed less than 40 units per pound of complete brood sow ration when used at a level of 25% and the lowest one only 20 units. The highest one of the twelve samples would have contributed far less than the 800 units per pound recommended by many nutrition authorities. (Send for free reprint "The Vitamin D Content of Roughages").

q: Will it do any good to put vitamin D into beef cattle rations?

a: Very little controlled research has been done, but benefits from supplemental vitamin D have been observed in college and commercial beef herds for growing, fattening, and breeding stock. Realizing that unrecognized losses may frequently occur, many feed manufacturers fortify beef cattle rations with vitamin D.

A. C. Wallis

Send your questions about vitamin D nutrition to Dr. A. C. Wallis, Director of Nutrition, Agricultural Department, Standard Brands Incorporated, 625 Madison Avenue, New York 22, N. Y.

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1. What was your cost per pig weaned last year?

2. How much feed did you use to produce 100 pounds of pork last year?

3. What was your net return over total costs last year?

If they can answer them, they're keeping records and know their value. If they can't, they need the unique, easy-to-use Record System described in the next three pages.

You, as a feed manufacturer or feed dealer, can now offer this Record System to your hog producers at no charge.

Now, you can offer a service long needed and wanted by hog producers

Cyanamid Production Accounting record is shown here with bills and sales receipts in handy pockets.

Offer CPA—Cyanamid Production Accounting. Your hog producers keep accurate records, put them to work reducing costs.

"Cyanamid and your feed manufacturer believe so strongly in the value of keeping records that they are bringing you your own personal CPA RECORD—a compact, convenient, easy-to-use record system."

This is the message your hog producers will be reading this fall in Cyanamid advertising in national, sectional and state farm papers.

Keeping accurate records for all stages of hog production has long been recommended and urged by feed manufacturers, extension specialists, bank farm advisers and leaders in the hog industry. This is the first time, we believe, that a complete record-keeping system has been offered *free* on a national scale. The CPA RECORD will be available only through feed manufacturers and feed dealers.

You can render a genuine service to your customers by offering CPA. Hog producers, by evaluating their records and acting upon what they show, can produce more hogs with the same labor and capital. They can wean more pigs per litter . . . produce more pork on less feed. They can plan production so that they sell on a higher market.

What CPA is

CPA RECORD is a 9" by 14" folder that can be used as a desk portfolio or opened out and used as a wall chart. It has handy pockets for keeping feed, veterinary and miscellaneous bills and sales receipts.

Most important in CPA are the record sheets themselves which are attached, at the proper time, to the master folder. There are two complete sets of these sheets to cover the records for all stages of production.

Record "A" is for posting feed during gestation and lactation. Space is provided for recording both purchased and home-produced feed.

Record "B" covers sow production at farrowing and weaning. Space is provided for a complete record on each individual sow.

Record "C" is a gestation-lactation summary. Here is where cost per weaned pig is figured.

Record "D" is for posting both purchased and home-produced feed during the growing-finishing stage. Space is provided for notes on death losses — and for dates and numbers of pigs started and finished.

Record "E" is for determining net return. To figure net return, farmers must know all costs in addition to feed. These costs are for pasture, veterinary services and supplies, labor, building and

CPA RECORD, with two record sheets attached, is shown as it appears when opened out.

BALANCED FORMULA FEEDS

with the proper levels of

- PROTEIN
- ENERGY
- MINERALS
- VITAMINS

PLUS

- AUREOMYCIN

are the basis for rapid, efficient, profitable pork production

FEED BILLS

VETERINARY BILLS

CYANAMID PRODUC FOR

RECORD A GESTATION–LACTATION FEED

PURCHASED FEED				HOME-PRODUCED FEED				
Date	Kind	Lb.	$	Date	Corn	Oats		

Get better sow performance by feeding AUREOMYCIN during the gestation, farrowing and lactation periods.

Keep starter pigs healthy and gaining fast on feeds containing AUREOMYCIN. Wean more pigs per sow.

Keep growing-finishing hogs on feed containing AUREOMYCIN all the way. Send more hogs to market.

equipment use, interest, taxes and overhead. Estimates of these costs, based on a study made by a leading midwest university, are supplied. These can be used as a basis of comparison or for estimating net return.

CPA is designed to be equally usable by the producer of feeder pigs, the purchaser of feeder pigs, or the man with a complete operation. Ideally, a set of records should be kept for each group of sows due to farrow at a given time and should be started when the sows are bred. CPA is flexible enough, however, to allow the producer who is farrowing continuously to keep annual records.

How AUREOMYCIN® pays

Many hog farmers who have kept records over a period of years know that AUREOMYCIN pays off when fed at every stage of hog production.

Recent controlled experiments conducted on 7 farms in Iowa involving 176 sows and their litters totalling 1523 pigs, revealed remarkable results when AUREOMYCIN was fed to sows and pigs from breeding to market.

There was an extra return of $3.65 for each $1 invested in AUREOMYCIN.

In these controlled experiments one group of sows and their litters were fed AUREOMYCIN. Another group of sows and their litters received no AUREOMYCIN. Results showed 9 more pigs weaned per 12 sows from the group fed AUREOMYCIN. That's a *big extra litter* and a significant profit picture for any hog farmer.

After weaning, the pigs were continued on the experiments through the growing-finishing stage — one group on AUREOMYCIN, another group without AUREOMYCIN. 10 more pigs were marketed per 12 litters from the group fed AUREOMYCIN. At market, that represented an extra return of $356.48 from one farrowing of 12 sows.

Combine this program with CPA RECORD keeping

When your hog producers follow the multi-stage swine raising program with your good formula feeds containing AUREOMYCIN, the CPA RECORD will show that hogs put on gains at the lowest possible cost.

We're urging hog producers to see their feed manufacturer or feed dealer for the CPA RECORD and for good formula feeds containing AUREOMYCIN for the multi-stage program — gestation, farrowing, lactation, starting, growing and finishing.

On the back page you will find full details on how to get your supply of CPA RECORDS.

*AUREOMYCIN is American Cyanamid Company's trademark for chlortetracycline.

TION ACCOUNTING
SWINE

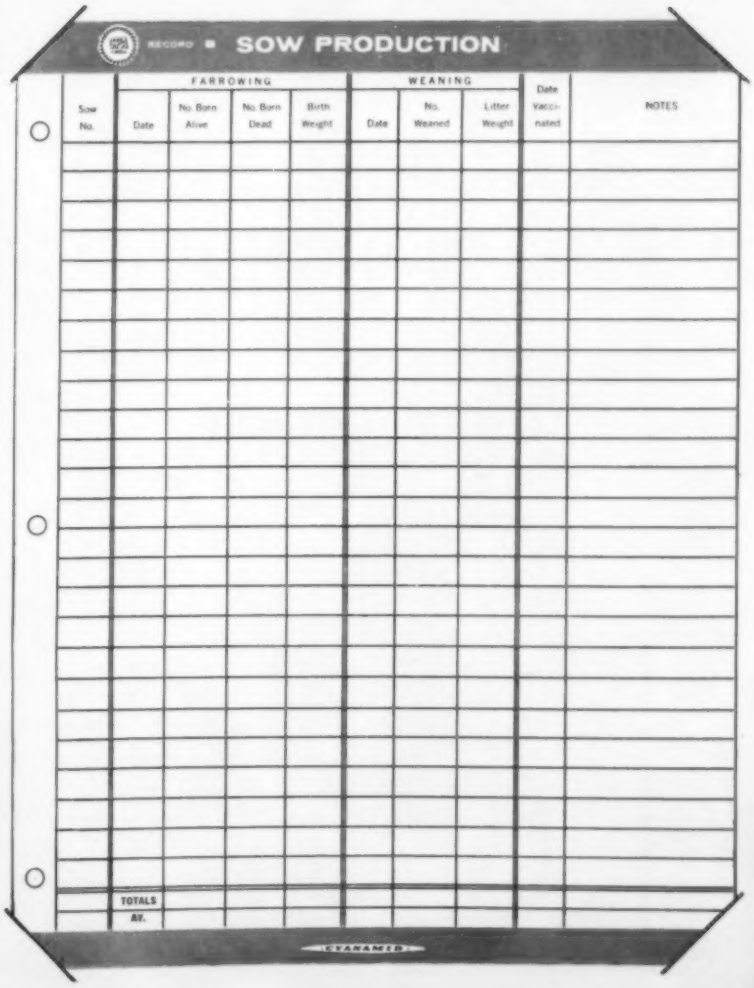

FIGURE YOUR PROFITS when you feed BALANCED FORMULA FEEDS containing AUREOMYCIN®

Follow the good feeding program outlined by your feed manufacturer. Feed makes up the major cost of raising hogs. But even the best feeds can fail unless you employ other good management practices, proper sanitation and a sound vaccination program.

AUREOMYCIN BENEFITS ALL THE WAY

Gilts and Sows —
- Aids in maintaining their good health.
- Reduces the "disease-level" on your farm.
- Helps to raise more pigs to weaning.
- Gives pigs that are heavier at weaning.
- Aids in eliminating the carrier-stage of leptospirosis when fed at 400 grams per ton for 14 days.

Starting Pigs —
- Saves more pigs.
- Assures more uniform pigs — fewer runts.
- Cuts losses due to scouring and invisible diseases.
- Promotes faster weight gains.
- Helps reduce the stresses of castration, vaccination, moving and weaning.

Growing Pigs —
- Keeps pigs making fast, low-cost gains.
- Protects against enteritis.
- Maintains weight gains in the presence of atrophic rhinitis.

Finishing Hogs —
- Insures against outbreaks of enteritis.
- Helps prevent costly jowl abscesses.
- Improves feed efficiency — saves feed when feed intake is highest.
- Gets pigs to market two to three weeks earlier.

RECOMMENDED VACCINATION SCHEDULE:

Sows and Gilts —

Before Breeding — Vaccinate with BOVAC® Hog Cholera Vaccine and DUOVAX® Erysipelas Bacterin.
Test for leptospirosis and if any sow is positive, vaccinate entire herd with Leptospirosis Bacterin and feed 400 grams AUREOMYCIN per ton of feed at mid-gestation.

Starting Pigs —

2 days — Inject erysipelas antiserum if the disease is a problem.
Inject PIGDEX® Injectable Iron to prevent anemia.
3 weeks — Vaccinate with DUOVAX if erysipelas is a problem.
7 weeks — Vaccinate with BOVAC and DUOVAX. (Do not vaccinate at the same time pigs are weaned.)

Prove to yourself that it pays to feed well-balanced rations containing AUREOMYCIN. ®Trademark

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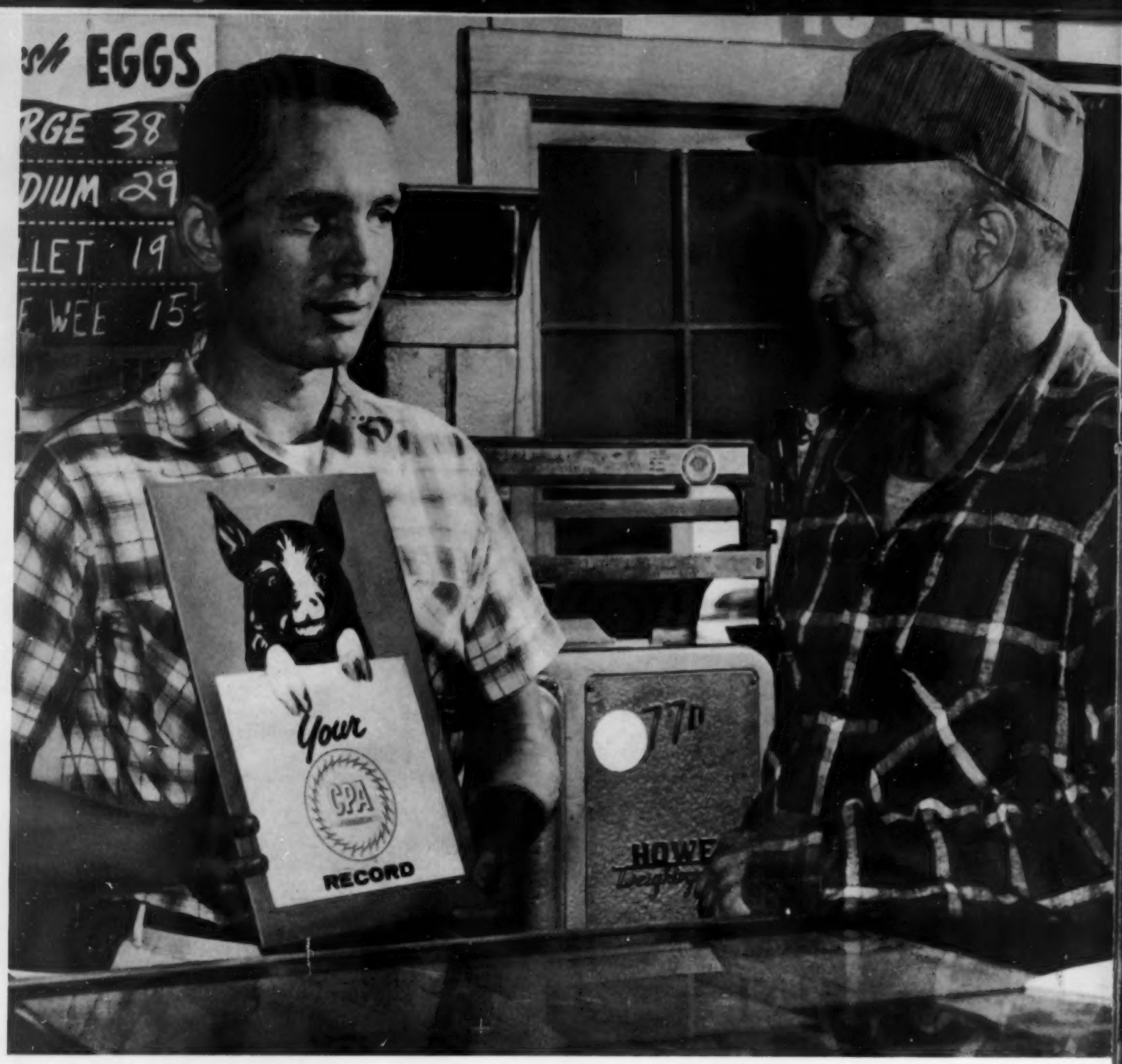
are the basis for rapid, efficient, profitable pork production

OTHER BILLS ⋮ SALES RECEIPTS

the same and appeared to be in as good condition as the controls. Rats



Customers will see or write you for their CPA RECORD

Your customers are being told—in national advertising in the farm magazines shown below—to get their CPA RECORD from their feed manufacturer or feed dealer. A coupon has been included for their convenience in writing to you. Feed manufacturers and feed dealers are urged to contact a Cyanamid field representative—or to write direct to Cyanamid—for full details on CPA and how it can be used to advantage.

American Cyanamid Company, Agricultural Division, New York 20, New York.

CYANAMID
AUREOMYCIN
IN FORMULA FEEDS

CONTEST—Ralph Humphreys (left), Nichols, Inc., presents William Harcowitz, Mount Vernon, N.H., with the first place trophy after winning the Nichols, Inc., 4-H Broiler Growing Contest recently. The Harcowitz birds, Vantress x 108 crosses, averaged 4.3 lb. at 65 days of age. The cockerels averaged 4.77 lb. and the pullets averaged 3.83. Larry Watts, Hudson, N.H., won second place.

Nutritional Value Of Undigested Grain Indicated in Tests

MANHATTAN, KANSAS—Experimental results indicate that whole grain reclaimed from animal feces retains most of its nutritional value.

To help find out what nutrients were left in grain that had passed through the digestive tract of the cow, Dr. D. B. Parrish, professor of nutritional chemistry, Kansas State University, and a graduate student, R. W. Kelley, conducted experiments with rats. They found evidence that whole sorghum grain recovered from a heifer's feces had little if any of its nutrients, such as energy or protein, removed and that availability of these nutrients was not changed.

Experiments were not conducted using ground grain, but in earlier studies at Kansas State cattle grew better and digested the feed better (except for crude fiber) when getting ground sorghum grain in place of whole grain. Even when sorghum grain was fed cracked or gound, considerable quantities appeared in feces, indicating nutrient losses, Dr. Parrish said.

In their tests, Dr. Parrish and his assistant gave a Holstein heifer a diet containing whole sorghum grain. Feces were collected and washed to remove the whole grain, which was dried at low temperature in a forced air oven. Grain from the same source as given the heifer also was washed and dried for use in a control diet.

Since grain is principally an energy feed and would never be expected to supply adequate quantities of all essential nutrients for rats, the three diets that were prepared from the sorghum grains had protein adjusted to 15% using soybean meal. Required minerals also were added to all diets, and the control and one diet prepared from reclaimed grain had a complete vitamin mix added. The other diet prepared from reclaimed grain was not vitamin supplemented.

The diets were fed to weanling rats for seven weeks.

Rats fed the vitamin supplemented reclaimed grain diet grew essentially the same and appeared to be in as good condition as the controls. Rats getting the reclaimed grain diet not supplemented with vitamins grew satisfactorily, but more slowly. Dr. Parrish concluded that the slower growth of the last group was no doubt due to the well known deficiency of certain vitamins in sorghum grain.

Gains in seven weeks were 186, 179 and 138 grams, respectively, for controls, vitamin supplemented and unsupplemented rats. Feed conversion ratios were 3.99, 4.01 and 4.38.

Dr. Dowe on Leave

BURLINGTON, VT. — Dr. Thomas Dowe has been granted a leave of absence from his duties as director of the Agricultural Experiment Station at the University of Vermont.

He will spend two months in Argentina as a ruminant nutritionist under the technical assistance program of the International Cooperation Administration.

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DOG FOOD
A Proven Profit-Maker

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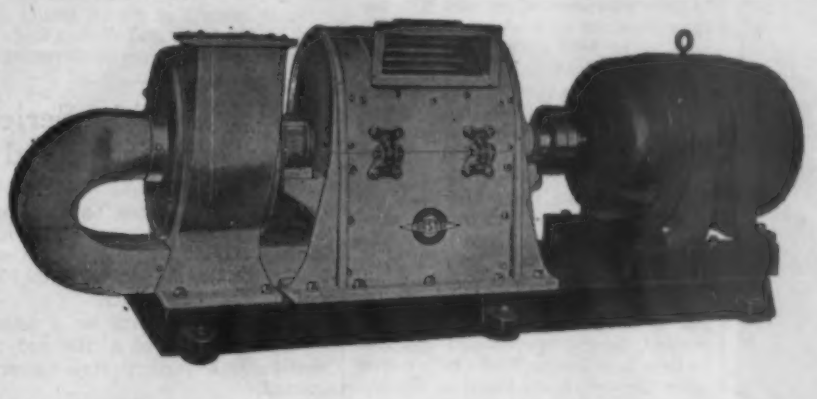

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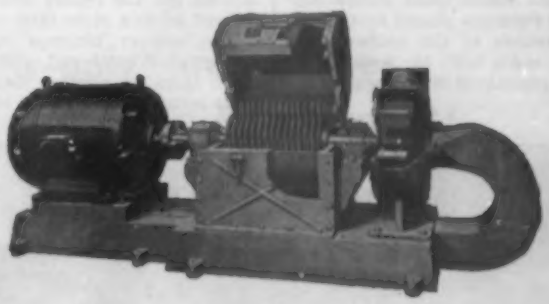

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DEALERS—John Wink (right), Gooch salesman from Columbus, Neb., is pictured with three of the Gooch dealers from his area who attended the auction. They are (left to right) Dick Alt, Duncan, Neb.; Frank Chlopek, Tarnov, Neb., and William Pelter, Newman Grove, Neb. Although this is only Mr. Wink's first year as a Gooch salesman, he had three successful bidders at the auction, two of whom are pictured with this central Nebraska group.

8th Annual Gooch Red Circle Auction Draws Crowd of 5,000 at CK Ranch

BROOKVILLE, KANSAS — The eighth annual Gooch Red Circle auction at the CK Ranch near Brookville was held recently. The auction drew a crowd of 5,000 youngsters and adults from seven states.

SCHOLARSHIP — John J. Vanier (left), Gooch president and owner of the CK Ranch, is pictured congratulating Sharon Pohlman, 16, Hickman, Neb., who won a $300 scholarship, top prize in the achievement award contest. Miss Pohlman placed first in the sewing division of the contest with items she made with the sewing machine she purchased at last year's auction.

The "no money" auction was originated in 1952 by John J. Vanier, president of the Gooch Feed Mill Co., to give farm youngsters an opportunity to own purebred calves and gilts for themselves or as a club project. The auction is held every year at Mr. Vanier's CK Ranch.

Gooch dealers view the auction as a year-round project that often develops into a community affair and gives them a strong contact with their customers and future customers.

Gooch officials point out that the dealers who realize the greatest benefit from the program are those who contact a local 4-H or FFA club early in the year and explain the program. The clubs select a representative to do the bidding, and then all members contact family, friends and relatives to help in collecting Red Circle points from bags of Gooch Feeds or Foods.

Dealers report that the effort often becomes a community-wide project with other clubs lending support and the local newspaper carrying an item about the lucky youngster with a request that readers help by donating their points. One girl at the 1959 auction got 150 replies after running a want ad in a state farm paper.

The contact between dealer and youngster doesn't end with the trip home from the auction. Some youngsters return several years in a row as bidders while others concentrate on "feeding out" their original purchase in aiming at an achievement award.

Judging for the achievement awards takes up part of the opening day at each auction. The youngsters send in periodic progress reports during the year and then return with photos to show the results they have achieved with their purchase from the previous year. The top winner gets a $300 college scholarship to the school of his choice and the others win cash prizes, ranging from $5 to $50.

SUPPER—Approximately 5,000 Midwesterners flocked to the CK Ranch near Brookville, Kansas, recently, for the eighth annual Gooch Red Circle auction. Pictured eating their supper "chuck wagon style" is a part of the crowd which watched 303 youngsters bid their Red Circle points for purebred calves and gilts and sewing machines.

Insurance Designed For Poultry Industry

HARTFORD, CONN.—Seven forms of insurance policies have been especially designed for the poultry industry by the Aetna Casualty & Surety Co., Hartford. All of the policies, according to C. F. von Pechmann, secretary, are limited to death or destruction of live birds caused by a number of perils. The policies do not cover "loss of market" nor disease.

Available forms of the poultry insurance are: (1) Broiler growers flock and annual policies, (2) egg raisers' flock and annual policies designed for laying hens, (3) turkey growers flock policies—light and heavy birds, (4) feed and poultry dealers policies for hatcheries and feed dealers financing growers of chickens and turkeys, (5) hatchery policies covering from the pickup of eggs, while in the machines and during shipment of chicks and poults, (6) transportation policies covering shipments of chicks, poults and eggs by air, truck and express and (7) pedigreed and breeder bird policies.

APHF 'Quickie' Series Dates Are Scheduled

KANSAS CITY, MO.—The first of a series of three winter "Quickie" conventions sponsored by the American Poultry & Hatchery Federation will take place Dec. 3-4 at the Hotel New Yorker, New York City.

The convention will be a jointly sponsored project of APHF and the Northeastern Poultry Producers Council.

The Midwestern "Quickie" will be held in conjunction with the Minnesota Poultry & Hatchery Assn. convention at Minneapolis Dec. 7-9. All sessions will be held at the Hotel Radisson.

Seattle will be host to the Western "Quickie" Dec. 11-12 at the Olympic Hotel.

Poultry Parasites Live Years in Soil

UNIVERSITY PARK, PA. — Eggs of some turkey and chicken parasites may live 2-4½ years after being deposited on soil and left exposed to outside weather, according to a U.S. Department of Agriculture parasitologist.

These findings by Marion M. Farr of USDA's Agricultural Research Service indicate that a 3-month or even 12-month rotation of poultry yards is inadequate for the safety of young chicks and poults at Beltsville, Md., where she carried out her experiments. Miss Farr's findings generally should apply to all similar climatic areas of the U.S.

The scientist, reporting her research at the annual meeting of the American Society of Parasitologists, in session at University Park, Pa., said infected poultry pass the parasitic eggs in their droppings. Other birds, as they pick for feed on the ground, may ingest the microscopic organisms.

Parasites damage the host by direct attack on tissue, and by eliminating toxic substances within the host. If present in large numbers, they can cause great loss.

In two series of tests at the Agricultural Research Center, Beltsville, Miss Farr said, droppings collected from infected chickens and turkeys were distributed on soil in small outdoor plots. Samples of this material were collected from time to time and added to the feed of isolated turkey poults. Fourteen to 30 days after ingesting the parasite eggs, the poults were killed and examined for evidence of blackhead and the nematodes.

Miss Farr found that the cecal worm, Heterakis gallinae, remained infective up to 230 weeks. Eggs of the round worms, Ascaridia dissimilis and/or A. galli. were infective up to 161 weeks. Thread worm eggs, Capillaria obsignata, infected the poults up to 102 weeks after depcsit on soil. Eggs of the gape worm, Syngamus trachea, were infective up to 31 weeks.

Histomonas melegridis, the causative agent of blackhead disease, was infective as late as the 151st week. Since it is known that the unprotected blackhead organism dies within a few hours outside the avian host, Miss Farr concludes the organism is incorporated within the cecal worm eggs.

POULTRY AWARD WINNER—Clifton F. Parrish (second from right), specialist in charge of poultry extension work, North Carolina State College, receives the 1959 Pfizer extension teaching award "for distinguished service to the nation's poultry industry." The $1,000 award, provided by the agricultural division of Chas. Pfizer & Co., Inc., in cooperation with the Poultry Science Assn., was presented to Mr. Parrish at PSA's recent annual meeting at Ames, Iowa, by Dr. J. H. Hare (second from left), head, development department, Pfizer's agricultural research center. Also pictured are Dr. J. H. Bruckner (left), president, PSA, and Dr. Robert Hoge, chairman, PSA extension teaching selection committee.

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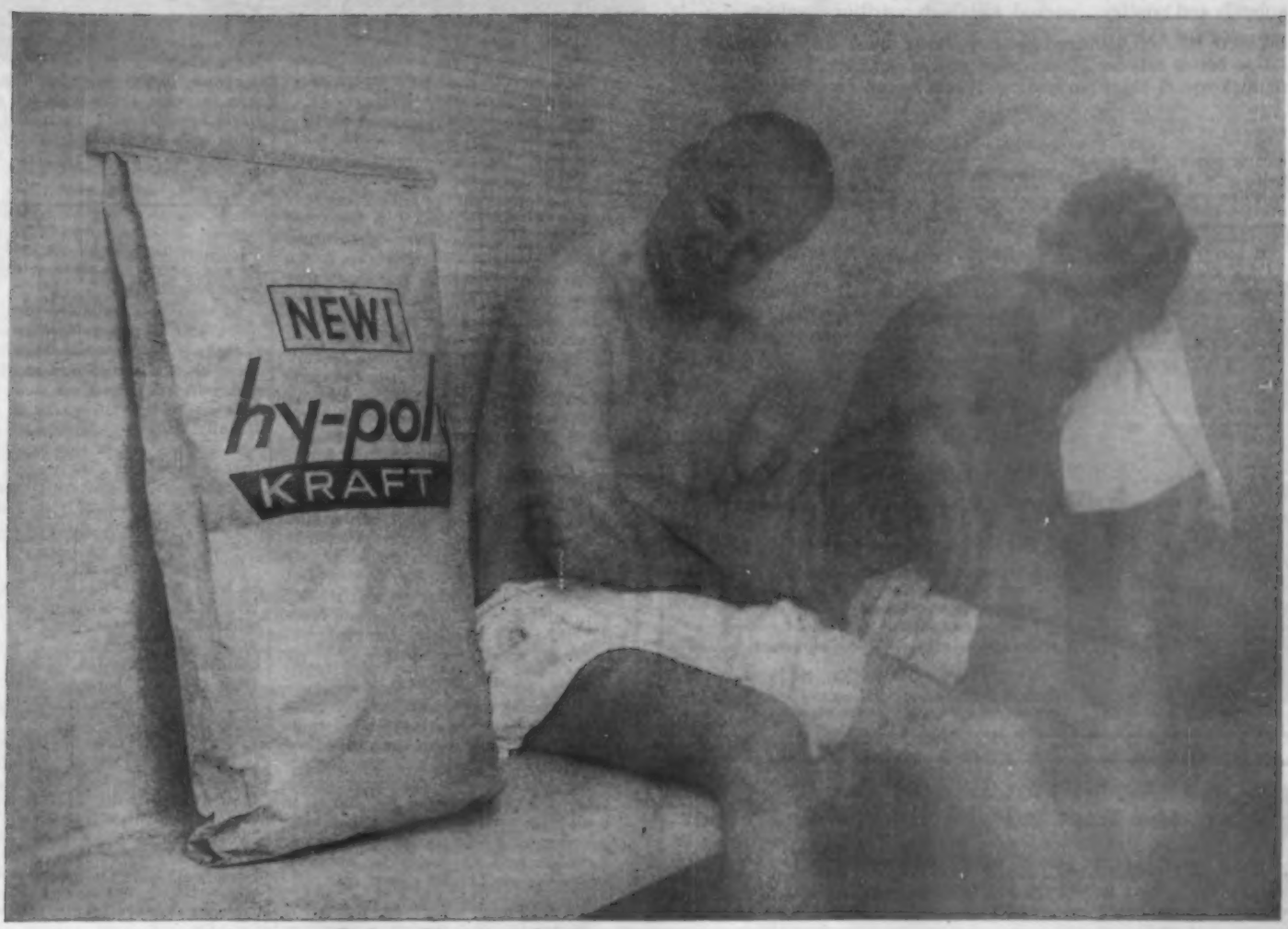

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THE multiwall bag you see taking a Turkish bath in our picture contains *calcium chloride*.

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Feed Man Is Key Figure in Contract Feeding of Broilers

"To stay in business, a dealer must get good feed efficiency. He must do everything else with equal efficiency just to stay solvent."

By Jess F. Blair
Feedstuffs Special Writer

EDITOR'S NOTE: Jess F. Blair, special writer, recently made an extensive tour of some of the southern states. The accompanying article reports some of his observations on contract feeding of broilers. Feed men in other areas who are not entirely familiar with the broiler operations will be particularly interested in this and other reports by Mr. Blair.

In practically all the contract feeding of broilers in the South, the feed man is the key figure. Some hatchery owners have added mills and set up their own integration programs, but the vast majority of these contract feeders are men who already operated a feed business of some kind.

They all went into contract feeding for one reason: to sell more feed. And to do this, they often had to set up farm growers, supply the baby chicks and control the entire program except for the processing. A few have even built their own processing plants.

The feed business in the South had deteriorated in many areas. Farmers often took jobs in nearby industrial plants and thus reduced their livestock and poultry. The large feeders might buy direct from a mill in another section of the state. So for several reasons, when contract feeding made its appearance a few years ago, feed dealers were immediately interested in it.

"My volume was dropping off every year," said a Mississippi dealer and broiler contractor. "I saw a chance to gain it back with broilers. We made some profits for awhile, but now things don't look so bright. But without some kind of contract feeding, I'd be back where I started, and so would a lot of others."

Mill Building

Most dealers feeding broilers have been able to renovate their old mills or build new ones. Yet there has been a strict economy in building, for nowhere does one see the large, elaborate plants that may be found in some other areas. Rather the broiler integrator builds a smaller, more compact mill that can be operated easily by one or two men.

"My building is new," said a Georgia mill owner, "but I shopped around for equipment and some of the pieces were second hand."

In some new mills the main equipment will be a grinder, mixer and perhaps a hopper scale. He will place these close together in a small space, and will run the feed into holding bins or to a waiting truck outside. Usually he doesn't have a lot of storage, and may be unable to keep more than a week or two weeks' supply of concentrates and corn. Since feed is brought in regularly and used every day, there is no need for large storage units.

Perhaps 95% of all feed is handled in bulk form. With 6 to 9-ton bulk trucks, a driver can load up in a few minutes, drive to a farm and unload in an overhead bin in a few more minutes. Usually he makes several trips per day, because most dealers try to keep their broiler units as close as possible.

Very seldom does one see the really large trucks, except in hauling feed to the mill. These are too large to be maneuverable on the country roads and too expensive. Some of the delivery trucks have been converted from other types, but mostly they have been manufactured for this purpose.

Efficiency

"One thing we are all striving for," said a mill owner in Alabama, "is to operate as cheaply as possible. With these small mills, I need only three men. One keeps it running by push-button control. The other is a roustabout who helps truckers unload incoming feed, clean up and run errands. The third man is the driver, and even he is sometimes used to help out when not on delivery."

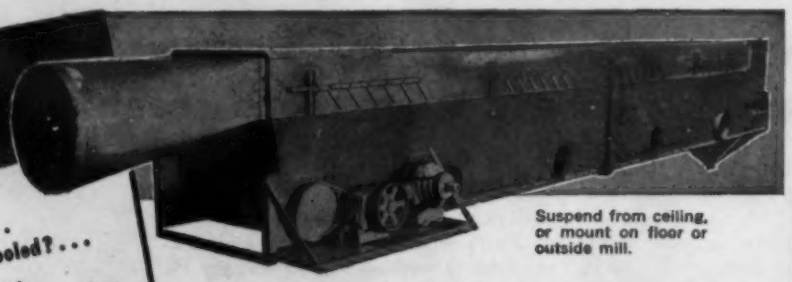
This dealer was feeding out near'y a quarter million broilers. His other help consisted of himself and a bookkeeper, although he hired extra help when delivering chicks or picking them up.

Feed Plans

Throughout this area of Mississippi, Alabama, Georgia and Arkansas, one finds dealers using three plans

Pellet Cooling Problems?

- Too many fines? . . .
- Pellets hang up in cooler? . . .
- Larger cubes inadequately cooled? . . .
- Uneven cooling of pellets? . . .
- No satisfactory control of retention time of pellets in cooler?



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NEWFIELD / NEW JERSEY
"PRODUCTS OF PROGRESS"

SWISS VISITOR WELCOMED—Ernest Hui (right), Schaffhausen, Switzerland, community ambassador representing the Institute for International Living, is greeted by Silas R. Renaudette (left), vice president in charge of manufacturing for Wirthmore Feeds, Waltham, Mass., and C. Dinsmore Worthing, executive vice president. Mr. Hui, who toured Wirthmore's office and research facilities at Waltham during his study of American economic and industrial practices, said American visitors to Switzerland would find that "the standard of living in Switzerland compares favorably with that of the U.S.," but expressed amazement at the opportunities for individual achievement in this country. The Wirthmore officials presented Mr. Hui with informational literature concerning the company and explained Wirthmore's current efforts in promoting consumption of meat, milk and eggs.

for buying and preparing feed. The dealer buys all ingredients. Or he buys concentrates already mixed by a supplier mill. The third plan is for him to buy a complete feed from his supplier.

All three plans are widely used. The small independent broiler grower who owns his own birds and feeds them at his farm usually buys a complete feed. Quite often this man belongs to a cooperative and buys from a farm co-op store, which in turn is buying feed from the association's feed mill.

A lot of broiler integrators also use this plan, particularly when they first start, or if they are in-and-outers. And throughout the area one finds feed dealers who have been in the business and quit.

The second step is where the mill owner buys his concentrates from a large mill, then adds corn. This might be termed the second step in becoming a larger operator. Yet there is no arbitrary procedure, because one of the veteran producers who went into the business back in 1939 is still buying his concentrates completely mixed.

"I am not a nutritionist," he said, "and I'd need to hire one if we ever mixed all the ingredients. I just don't think I'd save enough on feed to justify this man's salary. And I doubt if we could make a better feed than the major feed companies with their research programs."

It is quite likely that in most areas, this plan of buying concentrates is the most popular.

The third stage of growth is where the owner buys everything separately and does his own mixing. This is an increasing practice. His reasons are that he saves money on feed, and also he can control exactly what goes into it.

"I used to have to order special feeds for ailing birds or for a quick testing program," said one man. "It took too long to get it, or sometimes I got more than I needed. Now we can control the feed day by day if we want to."

Most integrators who make a complete feed at their mills have had years of experience, and many of them are agricultural graduates. But as mentioned before, there is no rule of thumb, except as a general rule the more birds a man has been feeding for a few years, the more likely he will have started making a complete feed at the mill.

As mentioned before, practically all feed is handled in bulk. Yet every mill is equipped for filling sacks, because sacked feed is often used in mixing small amounts and for the numerous testing programs.

Bulk Stations

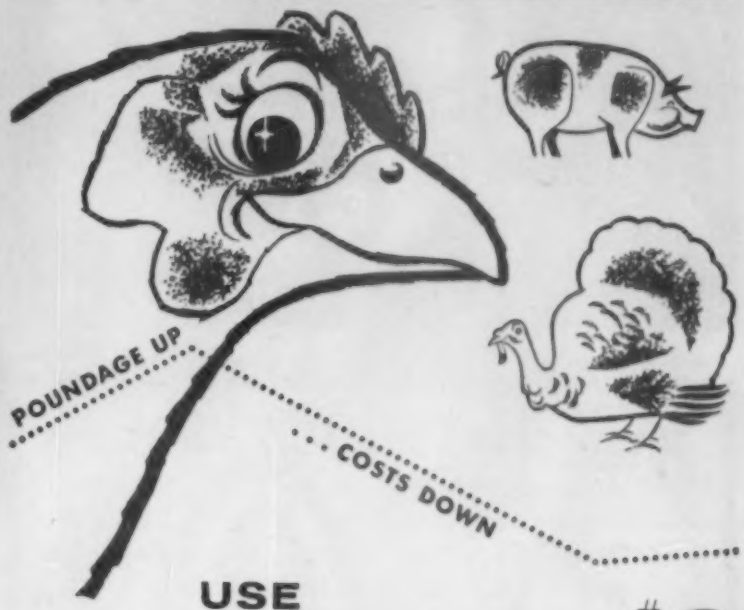
Other business and feeding trends were noted in all these states. The major feed companies, which are very active in the broiler areas, are putting in bulk feed stations close to the center of operations. These stations are usually operated by one man, and can load a dealer's truck in only a few minutes. Mostly they handle a complete feed, some of which may be sold directly to independent broiler farmers as well as to dealers.

The second trend, which still has doubters, is in feeding pellets and crumbles to broilers. One dealer says there is slightly more peck-out among birds when this type feed is put before them, but they will make better gains. On several tests he made, the birds eating pellets and crumbles put on a pound of meat for .15 lb. less feed than where an all-mash feed was used.

Most producers this summer were growing broilers for around 14¢ or more per pound. These were the efficient operators. The area and weather also have something to do with it. In cold weather it may cost a full cent more to raise broilers in the South. In the Ozark Mountain areas of Arkansas and Missouri, the difference may be still more. Also producers say it takes a week longer to get birds ready for market during the winter months. Instead of selling at nine weeks, they usually wait until the birds are 10 weeks old.

Throughout the South the nutritionists are making better feeds and breeders are producing faster-gaining, meatier birds. Feed-to-meat ratios have consistently dropped. Today a dealer who can produce a pound of meat on 2½ lb. of feed is no more than average. Some owners have dropped this down to 2¼ lb. of feed, but mostly it was for certain bunches. A 40% feed conversion is still considered pretty good.

"To stay in business a dealer must get a 2½ to 1 feed ratio," said an integrator in Georgia. "And he must do everything else with equal efficiency just to stay solvent. Even then when broilers drop below 16¢ he won't make any money; he'll maybe break even. If they get down to 15¢ and stay that way, we're all going to lose our shirts."



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CFS #3 consists of dried corn fermentation solubles on selected by-products from the wet corn milling industry. It is free-flowing, and handles well in bulk shipments. Test and formula data are available now. Investigate CFS Concentrate #3 today.

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Faster gains, better feed conversion and finish are the yardsticks your feeder-customers will use to measure the worth of the feeds you sell them. This suggestion is worth money: Put the "Sea Power" ingredients to work for you by supplementing your feeds with MANAMAR, rich in B_{12}, B-complex factors, trace minerals, the unidentified growth factors and fish proteins. Order your MANAMAR today!

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DEALERS ON TOUR—Shown during inspection of a swine growing and fattening unit at the Quaker Oats Co., Barrington, Ill., research farm are five of more than 40 Ful-O-Pep dealers who toured the company's research facilities recently. Kneeling is Clarence Beckman, Wells, Minn. Others (left to right) are: Carl Noth, Scotland, S.D.; Fred Howard, Janesville, Wis.; Don Anderson, Plano, Ill., and Ben Small, Tripp, S.D. Dealer tours are conducted twice monthly, encompass research laboratories at Barrington and the poultry research farm at Libertyville, Ill., in addition to livestock units.

Congressman Sued By Feed Company

ELKADER, IOWA—Ralston Purina Co. claims in a petition filed in district court here recently that Rep. Leonard G. Wolf (D., Iowa), who operated a feed firm here before his election last year to Congress, owes the company $16,000 due on two promissory notes.

Attorneys representing Ralston Purina allege that the notes signed by Mr. Wolf provided money to pay for the purchase of material formerly handled by the congressman. The petition states that the notes, signed Dec. 30, 1957, promised repayment at $200 a month, starting Feb. 1, 1959.

COOPERATIVES

MADISON, WIS.—The number of Wisconsin farm supply cooperatives which handle feed has dropped from 226 to 176 since 1956, according to the state department of agriculture. Mergers and consolidations were cited as the chief reasons for the decrease.

Magnetic ideas from ERIEZ

Tramp iron is a killer!

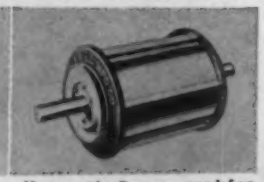
Tramp iron in your product can kill cattle and poultry . . . damage your reputation. It can ruin expensive machinery, start fires, cause downtime. Safeguard your investment with one of the many Eriez magnetic separators available to the milling industry. The Eriez Grate Magnet shown here is removing dangerous unwanted iron from a processing line before it can cause damage or contaminate the finished product.

To protect your equipment and your reputation, install an Eriez permanent-powered magnetic separator, used to pull dangerous tramp iron contamination from feed and grain processing lines of all types.

ERIEZ HI-POWR MAGNETIC SEPARATORS
ERIEZ HI-VI VIBRATORY EQUIPMENT

Magnetic Pulley—for separating tramp iron from materials conveyed on belts of rubber, canvas, leather, stainless steel or any other non-magnetic substance. Automatically cleans itself of accumulated iron. Belt widths and diameters in varying sizes.

Plate Magnet—powerful, fully enclosed magnetic units, for stationary or hinged installation. Four magnetic strengths, depending on depth of flow of line. Standard sizes from 4" to 72" width, in 2" increments. Special sizes made.



Magnetic Drum—used for spouts, chutes, spiral conveyors, etc. . . . whenever the materials are not conveyed on belts. Works equally well with hot or cold, wet or dry products. Self-cleaning . . . automatically drops tramp iron away from product.

Eriez manufactures the **most complete line of magnetic separators available**—separators to meet **your** specific needs. Choose from many models, strengths and sizes; get the **best possible protection at the most sensible price!** Eriez separators are non-electric, self-contained, easily installed. No operating or maintenance costs. Magnetic power guaranteed **indefinitely!**

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New, fully enclosed electro-permanent magnetic Vibrators especially made for hazardous, dusty locations. Most efficient way to keep hard-to-move materials flowing through hoppers, bins, chutes, etc. No rectifier needed. Exclusive pinpointed vibration impact. Low initial price. Low operating and maintenance costs. IMPORTANT: INSTALLATION OF THESE VIBRATORS CAN RESULT IN REDUCED INSURANCE PREMIUMS FOR BUILDINGS, EQUIPMENT AND STOCK—HI-VI VIBRATORS OFTEN PAY FOR THEMSELVES WITH THESE SAVINGS!

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PACKAGE POWER—"Electric Yellow" is the best name for the color of Kraft's new packages...the new look for this full line of money-making milk by-product feeds. Note high identification power (how one package "sells" another) . . . and the clean, dust-free look.

PRODUCT POWER—Ever see so many convenient ways to sell milk by-product ingredients!...one for

LOOK AT THE

POWER

IN THE KRAFT LINE OF MILK
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PRODUCT POWER—Ever see so many convenient ways to sell milk by-product ingredients!...one for every feeding program. All supercharged with valuable milk by-product nutrients.

PROFIT POWER—The sales-building combination of new packages and full line gives you plenty of the power that really counts . . . profit power. The power to earn better profits for your customers, better sales and profits for yourself. And the power-behind-the-power . . . Kraft. The name "Kraft"—America's great producer of milk products and milk by-products—assures your customers you sell the best.

PACKAGED FOR FARMERS

For Poultry:

PEX BLOCKS. For convenient self-feeding of milk by-product nutrients. Specially formulated blocks for broilers, layers and breeders, turkeys, chicks and poults.

PEX HIGH-LAY PELLETS. New—Super-concentrated milk by-product nutrients . . . for increased egg production.

PEX CONDENSED. In semi-solid form, ideal for moist feeding . . . palatable to birds even under stress conditions.

For Hogs:

KRAYLETS. The concentrated milk by-product feed booster famous for high weight gains at low cost . . . in pellets for hand feeding.

KRAYLETS PLUS 2. For baby pigs. Milk by-product pellets with antibiotics and vitamin B_{12}.

KRAYLETS CONDENSED. Highly concentrated . . . widely used for liquid feeding.

For Dairy and Beef:

KAFF-A MILK REPLACER. Famous brand . . . contains milk by-product nutrients that help promote calf growth and health. Sells for just a fraction of the value of the whole milk it replaces.

KAFF-A BOOSTER PELLETS. A highly nourishing dry milk by-product feed for dairy calves, heifers, cows, lambs, goats, beef calves.

INGREDIENTS FOR MIXERS

KRACO. Fresh-dried sweet whey supplement for formula feeds. Flows freely, mixes easily.

KRAY-9. Quality supplement for any dog food formula. Adds important milk by-product nutrients and extra nose appeal.

PEX PREMIX. For all poultry feeds, a combination of milk by-product and other supplements—in free flowing powder form.

PEX CONDENSED FOR MIXING. Semi-solid milk by-product ingredient for all poultry feeds.

PEX CRUMBLES. For convenient mixing in all your poultry feeds.

KRAYLETS PREMIX. For hog feeds; composed of milk by-products, antibiotics, and other supplements to simplify mixing.

KRAYLETS CONDENSED FOR MIXING. In semi-solid form for hog feeds.

KRAYLETS CRUMBLES and KRAYLETS PLUS 2 CRUMBLES. Also offered—for handy mixing with all your hog rations.

KAFF-A BOOSTER CRUMBLES. For all your dairy and beef feeds.

CONTINUOUS

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Here are the farm publications that carry powerful Kraft advertising messages to your customers. And the ads pack plenty of power to convince customers that Kraft's are the milk by-product feeds to buy! Tie in . . . stock Kraft feeds . . . fill the demand that advertising builds.

BETTER MILK BY-PRODUCT FEEDS . . . THROUGH KRAFT

RESEARCH POWER

Easy to understand why Kraft is so far ahead in know-how. New Kraft feeds are developed in vast research facilities, then tested under actual farm conditions. The result: better feeds . . . better meat and egg production. To you, Kraft research power means greater confidence, bigger sales.

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Nutrition, Other Subjects Discussed

these demands about the only thing

blood allels were preferred and

"Come, now, come," said the psychiatrist to his tearful patient. "You must cheer up. Be happy!"

"Be happy, he tells me yet," she answered. "How can I be happy? Twelve children I've had with that husband of mine, and he doesn't love me. What have I to be happy about, again I ask you?"

Said the psychiatrist: "Imagine if he did love you."

◆ ◆ ◆

Customer: "I'll take this $25 watch. It's for my son. He's graduating this spring."

Jeweler: "Ah, a surprise?"

Customer: "I'll say it is. He's expecting a new car."

◆ ◆ ◆

The man had just bought a cigar in a department store and started to light it.

"Didn't you notice the sign?" asked the sales girl.

"What!" exploded the customer. "You sell cigars in here but you prohibit smoking?"

The sales girl smiled sweetly: "We also sell bath towels."

◆ ◆ ◆

A tractor salesman was going along a back country road when he saw a farmer plowing his field with a bull hitched to the plow. Thinking this should be a likely prospect, he stopped his car, got out and approached the plower.

He made his pitch and then asked the farmer if he wouldn't like to buy a tractor. The farmer replied, "I've got a tractor in the barn."

"Then why in the world are you using this primitive method of plowing?" returned the salesman.

The farmer answered, "I aim to teach this critter there's something else in life besides romance!"

◆ ◆ ◆

A carpenter stood gazing silently and wonderingly at the crib where his first-born lay gurgling.

After watching the tender scene for a few moments, his wife walked over and put her arm through his.

"A penny for your thoughts, Dear," she whispered.

"I can't get over it," whispered the carpenter softly, "How the heck can they turn out a crib like this for only $29?"

Ted Silvius Killed

LEE'S SUMMIT, MO.—Ted L. Silvius, Lee's Summit, was killed recently in an auto accident. He was a manufacturers' representative, with PTC Cable Co., St. Paul, manufacturer of temperature control equipment, and Sapulpa Tank Co. as two of his accounts.

EXPANSION PLANS

TOPPENISH, WASH.—Expansion and remodeling activities of the former Benz Brothers Warehouse were started recently by Grain Dryers & Storage, Inc., Washington. The corporation recently purchased the warehouse to be used for corn storage and a drying plant. The $140,000 operation will be able to handle 10,000 tons of aerated corn for storage and will be able to dry between 400 and 450 tons of corn per day.

CUT COSTS

Your EGGtober Feeds with Terramycin* can help customers save 3.7% to 24% in feed costs*.

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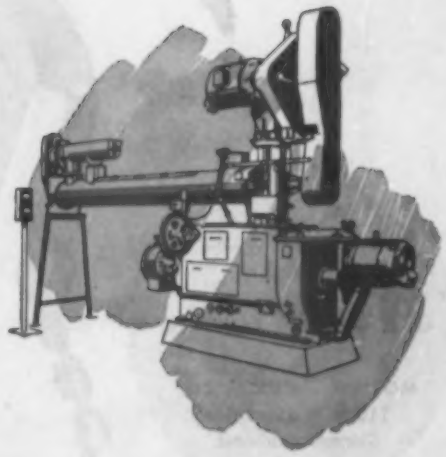
Everyone who specifies, buys and uses extraction equipment has three primary reasons for insisting on Anderson products.

First, Anderson Expellers process material *at a lower cost per ton than any other screw press.* The fact that more Expellers are used in oil milling than any other make of press is substantial proof of this statement.

Second, genuine Expeller replacement parts on the average give 27% longer life and keep "in plant" costs at a minimum.

Third, the user of Anderson products receives the benefit of Anderson service. Any problem in the operation of extraction equipment will receive the prompt attention of Anderson's engineering department and field engineers. A change to Anderson products can effect a more efficient and economical operation in your processing. We would like to discuss these possibilities with you.



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Feed nutrients
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FEEDSTUFFS WANT ADS

Nutrition, Other Subjects Discussed At Annual Florida Poultry Institute

By DR. ROBERT H. HARMS
University of Florida

ASTOR PARK, FLA.—The recent program at Florida's 18th annual Poultry Institute included talks on management, disease, breeding, marketing and nutrition. More than 300 poultrymen, representatives of allied industries, and their families registered for this meeting which was held August 17-22 at a 4-H camp located in the beautiful Ocala National Forest at Camp McQuarrie near Astor Park, Florida.

BREEDING: Dr. Cletis Williams, geneticist, Honegger Farms, discussed "What We Can Expect from the Breeder in the Future." He pointed out that the following people, listed in order of priority, would influence the hen of tomorrow: (1) Consumer or housewife; (2) wholesaler-retailer; (3) poultry producer; (4) franchise hatcheryman, and (5) the breeder.

He also stated that the first four of the above mentioned people would demand the following characteristics in the hen. (1) Ability to produce eggs with high interior egg quality that can be maintained over a long period of time, and that these eggs should be free of foreign bodies. (2) Hens must produce eggs with thick shells that are chalk white in color. (3) Each hen must lay at least 250 eggs and require only 4.0 to 4.5 lb. of feed to produce each dozen eggs. (4) Hens must have a livability of 90% in the laying house, and (5) be able to produce eggs that will maintain an 85 to 90% hatchability of all eggs set. If the breeder is to meet these demands about the only thing which he can be concerned with is how to develop strains or lines that are productive enough to be able to maintain themselves and be economical.

In another talk, Dr. Williams discussed the program for evaluating a new strain of birds. First the strain is compared in all possible combinations with two or three established or proven strains. If one of these strain-cross combinations proves satisfactory, it is further tested in their farm flock testing program.

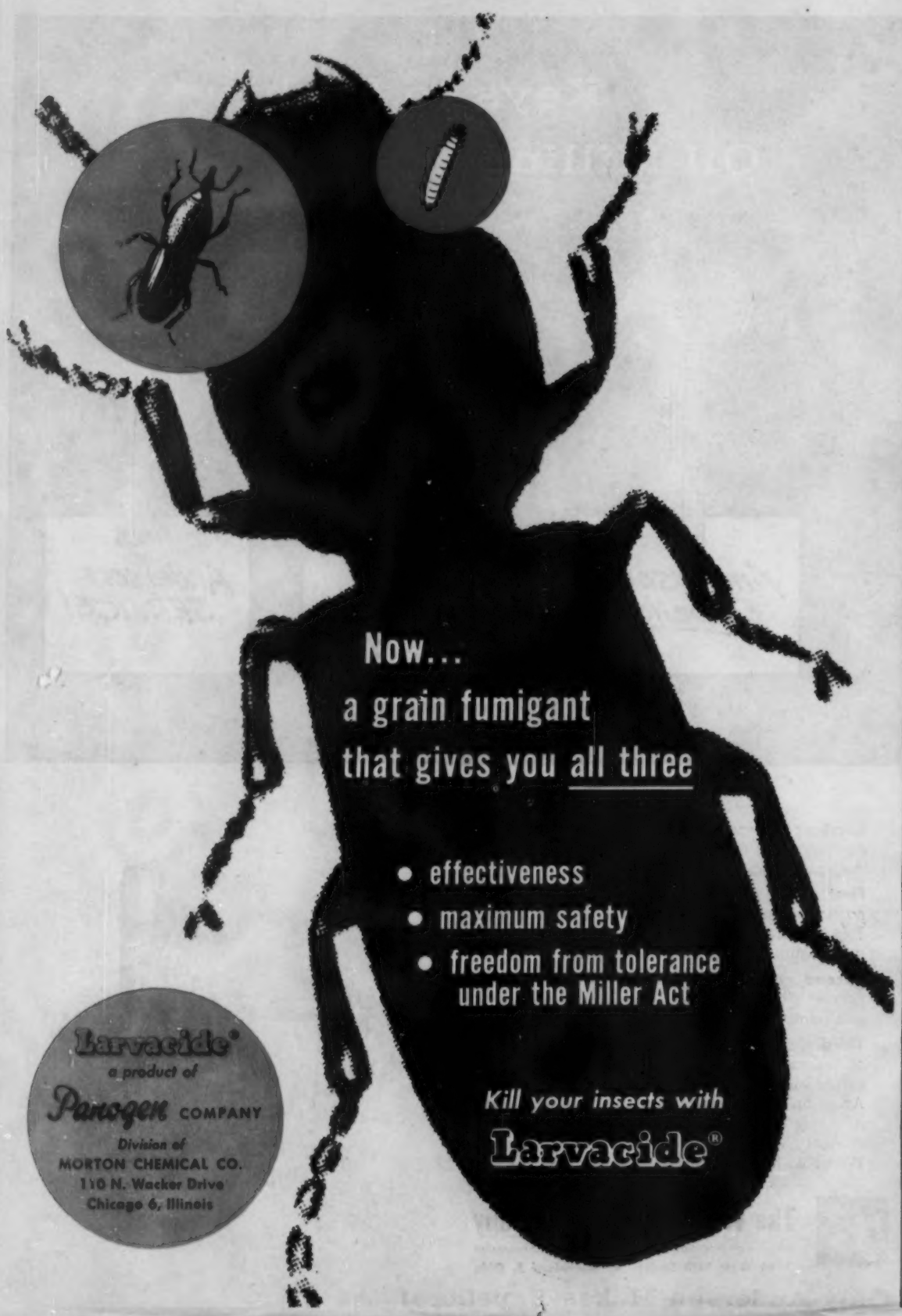
Dr. T. W. Millen, Hy-Line Poultry Farms, presented a discussion on the use of blood typing in crosses of inbred lines. He pointed out that Hy-Line Farms had been cooperating in a blood typing project since 1950. The early portion of this project was in cooperation with Texas A&M College. Dr. Millen stated that they had an effective testing program for their inbred males and that their early blood typing results showed that certain blood allels were preferred and that they had developed a new testing program for rapid identification and propagation of preferred allels with elimination of the undesirables.

NUTRITION: Dr. W. W. Cravens, director of feed research and nutrition, McMillen Feed Mills, gave a very interesting presentation on "Do Different Strains of Laying Birds Require Different Feeds?" He stated that he thought "it is possible to develop strains of birds varying in nutritional requirements. In fact, this has been done. Years ago birds differing in riboflavin requirement were developed, but in this case specific breeding techniques to breed one line of birds having a high requirement and another having a low requirement of this vitamin were employed." It was further noted that no such selection had been practiced with compercial strains of birds, and the possibility of such differences appearing by chance alone was very remote.

As most commercial feeds contain considerable margins of safety for most nutrients, it is not likely that a deficiency of any particular nutrient for any selected breed or strain would occur. (It is the opinion of this writer that we are a long way from having information which would justify the consideration of formulating feeds for different strains of laying hens. This is in agreement with the comments by Dr. Cravens.)

In reviewing "The Energy Requirement of the Laying Hen," Dr. Cravens pointed out that the feed required to produce a dozen eggs will be reduced each time the energy content of the feed is increased. Also that some research workers had reported increased egg production when higher energy feeds were fed. (It is the opinion of this writer that high energy feeds will give better rate of egg production. A comprehensive review on this subject is presented in Feedstuffs, Aug. 15, page 32.)

"Feed Restriction for Replacement



GIVE HIM ADVICE HE'LL APPRECIATE

Remind him to order Morton T-M Salt. See page 107.

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It's made for Suppliers of animal Fats

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Manufacturers and feed formulators know it is not safe to assume that even the highest quality fat will have enough natural stability to qualify for feed or alfalfa use. It is absolutely essential that the fat be treated with an antioxidant.

Resistalox, the liquid antioxidant, is a versatile and effective performer. It combats oxidative rancidity in both edible and inedible fats. It is extra soluble and is totally dispersible quickly – and stays that way.

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Resistalox requires an absolute minimum of agitation to reach total dispersion, and this means savings in the cost of agitation equipment, time and labor. Resistalox used at effective levels in unstable feed ingredients and in mixed feeds can be highly rewarding to the manufacturer. Our laboratories are at your service in providing specific formula data. Write Resistalox Sales Dept., P. O. Box 5998, Dallas, Texas.

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Resistalox is shipped in lined steel drums – 15-gallon capacity. For further details write – Resistalox Sales Dept. P. O. Box 5998.

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Pullets" was discussed by Dr. E. I. Robertson, director of nutrition, John W. Eshelman & Sons. The method of restriction for development of pullets with high fiber feeds was described. He pointed out that "pullet developer rations offer greatest promise in heavy breed pullets but provide distinct advantages for egg strains also. This method of feeding pullets appears to offer the greatest advantages with the least hazards." The advantage of the restricted feeding program is that a greater proportion of larger eggs will be produced during the following laying period. However, egg size for restricted or full fed pullets will be similar on any calendar date.

Dr. J. H. Hare, head, development department, Chas. Pfizer & Co., Inc., presented a talk on "The Effect of Antibiotics in Poultry Rations." It was pointed out that the feeding of antibiotics had been shown to increase growth rate of broilers and increase the rate of egg production with laying hens. This is usually accomplished by feeding low levels of the antibiotic. However, for the treatment of certain diseases it is desirable to obtain a high concentration of antibiotic in the blood stream, and in order to attain such concentration a very high level of antibiotic must be fed. Two methods of getting better absorption of the antibiotic from the intestine were discussed. These were by the feeding of terephthalic acid or by reducing the calcium content of the feed. The use of terephthalic in poultry feeds has not been approved by the FDA; therefore, until it has been cleared for use, it is of no help. It is possible to enhance the effectiveness of the tetracycline antibotics in poultry feeds by removing the calcium from the feed. Care should be taken not to leave the calcium out of the feed too long.

The writer reviewed the poultry nutrition research work being conducted at Florida. It was pointed out that when all of the supplemental phosphorus was removed from a corn-soybean type laying feed, egg production was reduced by approximately 10%. Also that the phosphorus requirement of the laying hen is probably less than 0.6% as recommended by NRC.

DISEASE: Dr. Birch L. McMurray, poultry veterinarian, Florida Livestock Board, summarized 2,200 cases which were diagnosed during the past 12 months at all of the diagnostic laboratories in the state. They were as follows: Pullorum disease, 7; omphilitis, 45; fowl cholera, 18; CRD, 397; infectious hepatitis, 37 with 54 others suspected; Newcastle disease, 45; bronchitis, 40; fowl pox, 62; leukosis (all forms), 310; epidemic tremor, 42; cecal coccidiosis, 251; intestional coccidiosis, 466; blackhead, 45; nutritional diseases, 14; blue comb, 72; hemorrhagic, 142; enteritis, 174. He stated that typhoid or laryngotracheitis had not been found in Florida.

Dr. Millen presented a discussion on "Coccidiosis in the Production Pullet" and Dr. Robertson talked on coccidiostats. It was pointed out that coccidiosis is a serious problem; however, we are fortunate to have several good coccidiostats on the market, each of which has its strong points as well as weak ones. Each poultryman must decide what type of protection he desires and select his coccidiostat accordingly.

MANAGEMENT: Dr. C. C. Moxley, associate economist, University of Florida, in his talk on poultry records pointed out that if the poultryman is going to meet future competition it is going to be necessary that he keep a complete set of records. He further pointed out that keeping the records alone would not get the job done. After records are made they must be analyzed in order to make needed adjustments for more efficient operation.

In all, 32 talks and panel discussions were presented during the four-day program.

Effort to Find More 'Scrap Fish' Planned

PASCAGOULA, MISS. — A new program, placing emphasis on "scrap fish" of the South Atlantic, will be implemented by the U.S. Fish & Wildlife Service at Pascagoula.

Harvey Bullis, Jr., Pascagoula fishery laboratory chief, said the venture is a continuation of a program discontinued November, 1957, for lack of funds.

Instead of the deepwater inhabitants such as tuna, the exploratory efforts will concentrate on shallow water industrial fish—those species not used for human consumption.

Cruises of from 2 to 4 weeks on the Silver Bay, a charter vessel, are planned. Waters to be explored range from Cape Hatteras, N.C., to Cape Canaveral, Fla., Mr. Bullis stated.

Testing for the supply of industrial fish, used largely in the manufacture of pet foods and poultry feeds, will be in the 50 fathom depth (300 feet). The range will be from 10 to 75 miles off shore.

Though there is no shortage of scrap fish areas, the present known supply is being "fully utilized," Mr. Bullis pointed out. Increased industrial fishing is being conducted by shrimpers and other fishermen as a secondary income source during off seasons.

A sub-station on the Atlantic Coast will be set up to aid in the program, with the location yet to be selected.

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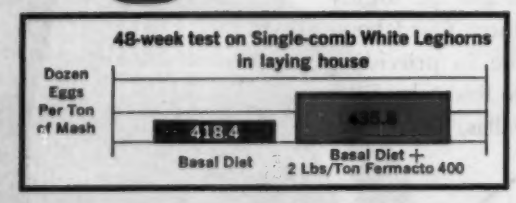
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PROBLEMS IN BULK HANDLING AND SUGGESTED SOLUTIONS

- **Product Identification**
- **Contamination**
- **Weights of Feed**
- **Fines**
- **Shrink**

By J. D. Johnson
General Mills, Inc.

J. D. Johnson

EDITOR'S NOTE: The author of the accompanying article, J.D.(Don) Johnson, is production superintendent for the feed division of General Mills, Inc., Minneapolis. This article is from a talk by Mr. Johnson at the Canadian Feed Manufacturers Assn. convention.

In each and every business there are problems; and in the feed business when bulk is handled, there are also problems.

Some of these are:

1. Product identification.
2. Weights of feed.
3. Contamination.
4. Fines.
5. Shrink.

PRODUCT IDENTIFICATION — There is little doubt in the mind of a mill operator as to whether or not a feed is dairy or poultry or pellets, crumbles or mash. But it is difficult to determine by the eyeball analysis, pinching or smell test whether or not a feed has antibiotics, medicants or at what level these are added to the feed.

Each feed is formulated to perform a specific job for a specific animal, and it is important that this feed be fed to the proper animal. Giving the wrong feed to an animal can result in the animal's refusing to eat the feed, or, in some cases, the ingredients in the feed can be toxic, causing sickness and, in extreme cases, death. For this reason it is important that great care and some method be devised to properly identify the feed in a bin or truck.

One simple method is to provide a pocket on each bin in the mill or on the truck and insert a tag in this pocket as the bin is being filled. Another device that has been used is a plastic envelope into which a tag is placed as the bin is filled and then attached to the gate of the bin; thus, whenever the bin is emptied, the operator can be sure that he is drawing from the proper place.

It is usually required that the customer receive a copy of the tag for the feed which he purchased. Because the feed is in bulk, the only way this customer will receive the tag is if he is given it at the time of delivery. If the tag is stapled to his delivery slip, then, by checking this tag against the one that is attached to the bin on the truck, it is possible to double check as to whether or not the proper feed is being delivered.

In the mill a blackboard with a diagram of the bins can be used. And on this blackboard the production man can write in the name of the feed as it is being filled. Another system can be a permanent bin chart on which is typed the name of the feed in the bin. This system can be used whenever there are sufficient bins to maintain a constant inventory of the feed in the bin. With the many variations of each type of feed, it becomes quite costly to provide such a system, and for this reason the blackboard method is the most practical.

Remember that the customer wants to be sure the feed that he receives is what he ordered. To be sure of this, great care must be exercised in identifying the bulk feed in the mill bin, bulk truck or railroad car; in the sub-station; and ultimately in the customer's bin. Each operator must be constantly on guard to be sure that there is nothing taken for granted.

WEIGHTS—Whenever a transaction is made, each party wants to be sure that he has a fair deal. The customer doesn't want too little, and the supplier can't afford to give too

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much. The correct amount satisfies both parties. Selling bulk feed is no exception to this. The exact amount of bulk must be known and evidence as to the weight provided for the customer and the accounting department for production records and billing purposes. There are many types of scales that can be used.

A continuous grain scale can be used to weigh the stream of bulk to the bin, the customer's truck or railroad car. Readings must be taken before and after to give the total amount of feed. In many places the railroads will accept such a method in determining billing weights.

Hopper scales with a printing device on the beam will give scale tickets that give accurate records for the customer and the company. Weights should be taken on each draft as the feed is being loaded into the bulk truck or car.

Sometimes weights are taken as the feed is being loaded into a storage bin for production records; but the usual method for determining inventory is to calibrate the bin and measure the amount of product in the bin.

Truck scales or combination truck and track scales are the most costly, but are used because they give the total weight of the vehicle and the product at the time loading takes place. By the use of tare and gross weights it is easy to determine the amount of product in each bin as well as in the total truck. A ticket attached to the bill or invoice is an accurate method of showing what is being delivered.

Tote-bins are usually weighed at the time of filling either by a dormant scale or an overhead hopper scale. But in both cases it is best to provide printing devices. It is not imperative that a printing device be used because tickets can be written by hand. But experience has shown that in many cases the operator will forget to write the gross or the tare weight, and sometimes it is necessary to empty the bins or estimate the weights, neither being very satisfactory.

Another means of obtaining weights of bulk is the use of a public scale. Tare weight is obtained when the truck is empty, and a gross weight is taken after the truck has been filled. This is very satisfactory if only one type of feed is being supplied by the bulk truck. If several kinds of feed or more than one customer are to be loaded with the one truck, it means that several trips must be taken to the scale or the truck routed to go over public scales between customers. The cost of the weighing plus the additional mileage and driver's time can be sizeable and should be carefully considered to determine whether or not there is justification for the purchase and installation of some type of weighing equipment.

CONTAMINATION — Contaminated does not necessarily mean feed that is unfit for consumption due to some injurious substance being present. Contaminated feed can be feed which is a mixture of dairy with poultry, pellets in mash, or it can have the wrong ingredient in the feed. With all the special micro-ingredients, medicants, hormones and minerals that are being used for special effects, it is imperative that the feeds be kept separate and not intermixed. Handling feed in bulk increases the possibility of contamination.

Where does contamination take place? Considering a bulk system, it can take place in the storage bins in the mill, storage bins at the dealer or sub-station, through the elevators and conveyors used in both places, in the bulk truck or car used to convey the feed. Proper identity of the feed in the bins or truck will do much to help prevent contamination by mixing two different feeds in the process of transferring from one container to another.

Continual vigilance on the part of all people handling bulk plus proper design of the various pieces of equipment of the bulk system can eliminate all contamination. Bins should be metal or crude bins sheeted with metal to eliminate any ledges within the bin. Hoppers within the bin should be steep enough to prevent bridging. Conveyors should be belt or drag chain, but screw conveyors can be used if a washout is taken between each change in feed or the conveyor is thoroughly cleaned by brush or vacuum. Valves in the system should all be positive and self-cleaning. Contour gates on conveyors will eliminate the pockets and in this way eliminate a place for the feed to lodge. Bucket elevators should always be cleaned between each feed to prevent contamination in the boot. Inclined drags are self-cleaning and will eliminate this source of contamination.

Caution and care should be the watchword in handling bulk through railroad cars or trucks. Each vehicle must be inspected and cleaned between each loading. If the attitude is taken that whatever is in the vehicle can be harmful to the animals and the vehicle cleaned on this basis, there should be no contamination. There is usually some type of elevating and conveying equipment within a truck. Sometimes this is a drag chain; sometimes it is a screw conveyor; sometimes it is a belt feeder. The drag chain and belt feeder are usually self-cleaning; but if the screw conveyor is used, then a cleanup must be taken between each type of feed or compartment. The elevators can be screw type or can be drag type. If a screw type conveyor is used, there is usually an opening at the bottom allowing for a cleanout between feeds.

Nothing has been said about the pneumatic system. This type of a system is practically self-cleaning and should not contribute to contamination whatsoever.

FINES—Much of the feed sold today is in the form of pellets and crumbles. The customer isn't at all

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interested in receiving mash when he has ordered and paid for pellets or crumbles. The pelleting process is fairly simple in principle; yet it poses many problems.

The ultimate quality of a pellet is determined by a number of factors: the composition of the mash which will be used as pellet stock; the proper preparation or conditioning; the thickness of the die in the pellet mill as well as the size, shape and number of holes in the die; the proper curing, cooling and drying of the pellets after they leave the mill; the type of scalping operation used to separate the "fines" and dusty particles from the finished pellets; the application of liquids to the pellets and the timing of such application.

Fines can also be caused by (1) the equipment used in handling the feed and (2) the amount of handling of the pellets or crumbles in the bulk system. Screw conveyors, screw lifts, pneumatic systems and bucket elevators all tend to develop fines as the product passes through them. The shorter or smaller the system, the smaller the amount of fines developed. Belt conveyors, drag conveyors, drag chains, inclined drags all produce less fines and they should be used whenever it is feasible. Sometimes, due to the many handlings of the feed in bulk, it is necessary to sift the product prior to loading into the truck that is going to deliver the feed to the customer. Fines that are taken out here must be disposed of and this is an added expense.

The best rule to follow in regard to fines is to handle the feed as few times as possible over as short a length of the system as possible and with the gentlest handling that can be designed.

SHRINK — Have you ever tried weighing ten 10-lb. sacks of sugar from a 100-lb. sack? It just can't be done. The same principle applies in bulk handling of feed. As the product is handled, there is some loss between each station or handling. Each mill operator is continually endeavoring to reduce the amount of shrink that takes place in his mill, and each bulk operator must do the same. Finished feed includes, in addition to the ingredient costs, the cost of labor, overhead and freight. As a result, the number of dollars involved per ton is greater than if it were just plain corn or oats.

The entire system of bulk should be carefully designed and operated to reduce the loss of product. Good unloading and conveying systems, tight bins and trucks, closed conveyors and air cleaning, if used, should be spouted back to the system—if all of these things are done, the shrink involved should be at a minimum.

Bulk is on the increase and can mean extra tonnage and money in the till, but don't lunge into it until real consideration has been given to all phases. Design the system for the future, but build it for today.

Minneapolis Grain Assn. Elects Officers

MINNEAPOLIS — Thomas G. McCarthy II has been elected president of the Minneapolis Grain Commission Merchants Assn., succeeding R. A. Morken of Hallet & Carey.

A vice president and treasurer of McCarthy Brothers Co., Mr. McCarthy has been a member of the exchange for 20 years.

Other officers elected by the commission men include: vice president, J. Kenneth McCoy, Cargill, Inc.; secretary, Gordon J. Berg; directors, R. W. Benson, Ralph H. Hegman, Kermit W. Quaintance, R. W. Bolton, Mr. McCarthy, Mr. McCoy and Mr. Morken.

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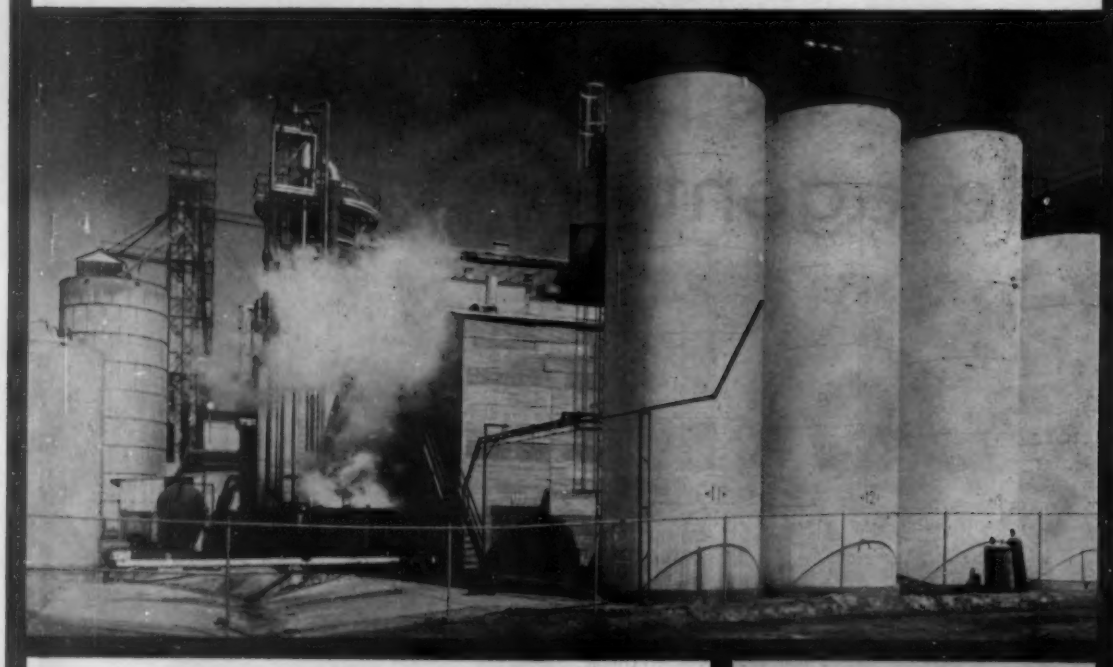

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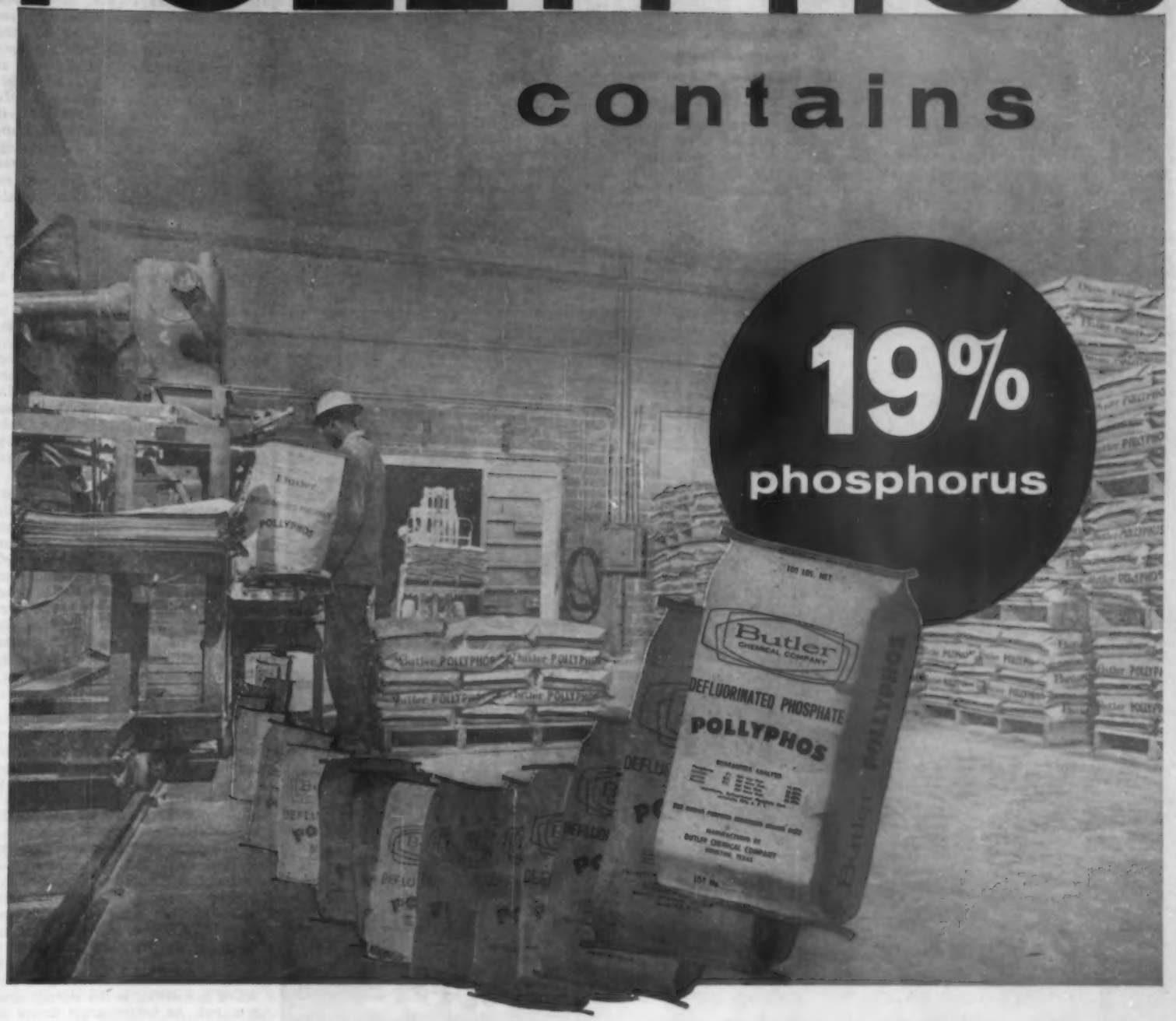

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PRINCIPLES OF GRAIN DRYING

"The better a grain or feed man understands the basic principles of grain drying, the better he can evaluate his own experiences."

By Robert A. Saul
Agricultural Engineer
U.S. Department of Agriculture

Grain has been dried mechanically for many years. In some locations and with some grains it is almost essential that some method of drying the grain after harvest be employed if the grain is to be stored for any length of time. The benefits of mechanical drying, however, have spread from a few isolated localities and selected grains to become almost universal in the field of grain production. Since the principles of grain drying are essentially the same for all kinds of grain, shelled corn will be used as the basis of this discussion. The ideas and methods which will be covered can be applied to most other grain with slight modification.

Timeliness is increasingly important in agricultural production. As in all of industry, maximum production per unit of capital and labor invested is essential to the successful management of today's agriculture. Maximum yields of corn depend to a significant extent upon the time of planting and the time of harvest. Mechanization of the field operations of planting, fertilizing, cultivation or chemical weed control, and harvesting have made it possible to perform these operations at the most efficient times. The development of machinery for field operations has reached the stage where it is possible to take full advantage of the knowledge gained by scientists in the field of micro-climatology so that field operations can be tuned ever more closely with nature. The average yield of corn per acre has been steadily increasing ever since the introduction of hybrid seed. This is due in a large part to the fact that mechanization of field operations has made it possible to perform these operations at the right times.

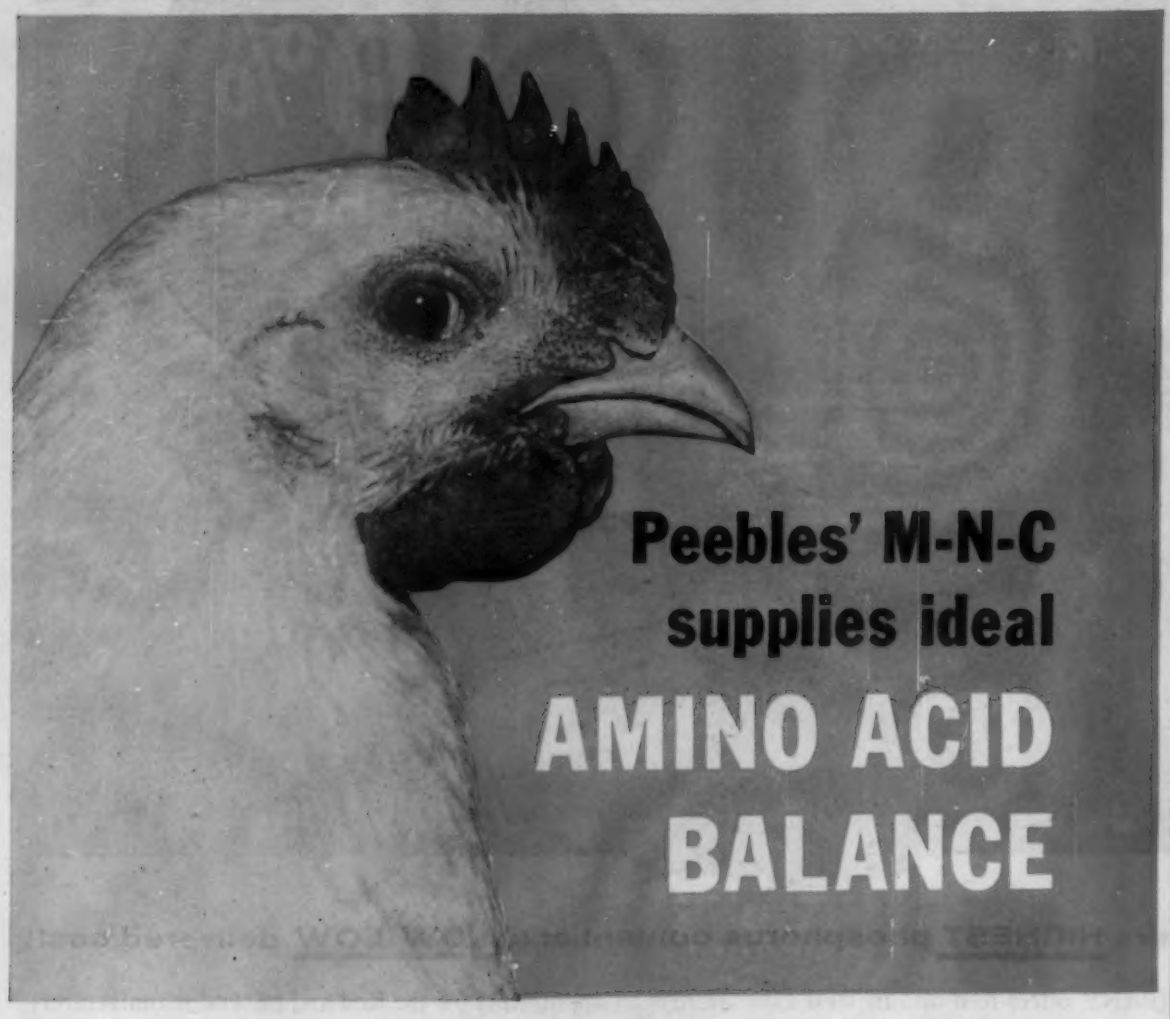
EDITOR'S NOTE: The author of the accompanying article, Robert A. Saul, is an agricultural engineer with the Agricultural Engineering Research Division, Agricultural Research Service, USDA, located at Iowa State University, Ames. This article does not necessarily reflect the opinions of USDA, nor is any endorsement of any manufactured article intended or implied by the USDA. Mr. Saul is a 1950 graduate of the University of California at Los Angeles, with a degree of bachelor of science in engineering. He spent his senior year on the Davis campus of the University of California, in agricultural engineering. Since that time Mr. Saul has been employed by USDA in research on grain processing and storage problems.

The modern corn harvesting equipment makes it possible to pick the crop rapidly and efficiently. Seed corn producers have realized for many years that they must harvest their corn early to prevent loss. There are very few seed corn producers today that do not include early harvest and mechanical drying in their regular management practice. This practice insures a quality product and eliminates the hazard of frost damage.

Profit from Early Harvest

The knowledge gained in the past 10 or 15 years about grain drying and drier design now makes it possible for the farmer to realize a profit from early harvest. Shelled corn can be dried from 25 to 13% moisture for a total cost of from 7 to 10¢ bu. He breaks about even for $1 corn with a 10% gain in yield due to early harvesting, but he is insuring himself against high losses due to wet fall weather, wind damage with dry stalks which is often excessive due to corn borer damage, or early freezing weather. By handling his corn as shelled corn rather than ear corn he reduces the bulk of the crop by 50% which is a saving in the storage space required. As better grain driers are manufactured, the cost of drying will be reduced, which seems to indicate that mechanical drying will become the accepted practice in production of corn. The question then arises, "What is the effect of mechanical drying on grain quality?"

The information available to form an answer to this question is limited. The studies which have been made



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Mr. Smith has a highly mechanized feeding operation. Pictured here is his self-designed silage cutter and loader which makes short work of an otherwise long, heavy job in his 3000-ton pit silo.

At the time this picture was taken, Smith had 1032 cattle on feed. Under his normal operation he feeds heifer calves about 300 days, and steer calves from 365 to 455 days. Market weight for his heifers is around 1000 to 1050 lbs. Steer calves are sold at about 1250 to 1400 pounds.

Feeder gives four reasons why he sticks with Stilbosol supplements

"We must take advantage of things like Stilbosol if we are to make a profit in this business," says cattle feeder who helped pioneer use of Stilbosol supplements.

By Eugene S. Hahnel

Lyle Smith began using Stilbosol supplements as soon as they were available in late 1954. Since then, he has fed Stilbosol rations to about 5000 steers and heifers. Why has he stuck with Stilbosol supplements?

"Anything that consistently cuts cost and increases gain like Stilbosol is certainly here to stay for a long time," he told us recently. "We don't question Stilbosol any more . . . we just count on it."

Smith's records prove his point. He expects to get at least 15% extra gain from Stilbosol. "Five years ago, we'd get about 2.25 lbs. daily gain on short feeds, and about 1.8 lbs. on calves . . . if we had good luck. Now, on short-fed steers (100-120 days) we expect, and get, a daily gain of 2.5 lbs. or more on Stilbosol rations. With calves fed a year or more, we get two pounds or more, pay weight to pay weight."

Mr. Smith, in his practical way, points up one of the strongest sales stories that can be told today . . . the wonderful, consistent results cattle feeders may expect from supplements with Stilbosol.

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LYLE SMITH, NEVADA, IOWA

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SELLIN' SAM — By Jim Zilverberg

"I think you're carrying this too far even if you have been made sales manager!"

and reported can best be understood if they are prefaced with a discussion of the principles involved in the process of grain drying.

Principles of Grain Drying

Grain is a hygroscopic material. It tends to be in moisture equilibrium with the air surrounding it. If dry grain is exposed to an atmosphere of 100% relative humidity for a sufficient length of time, it will be rewetted to a moisture content of about 24 or 25%. On the other hand, wet grain exposed to air having a relative humidity of 60% will dry to 12 or 13% in time.

Relative humidity of the air can be determined by measuring the wet and dry bulb temperatures of the air. The wet bulb temperature is measured by enclosing the bulb of the thermometer with a small wick which is saturated with water. An air stream is then passed by the bulk either by blowing or by swinging the thermometer in a sling. As the water evaporates it absorbs heat and reduces the temperature of the bulb to that which corresponds to the relative humidity of the air. The process of grain drying is one of evaporation, and the difference between the wet and dry bulb temperatures of the drying air is a measure of the heat available for drying.

Unheated or natural air drying of shelled corn in the Corn Belt is possible because the average relative humidity of the air during the fall is 60% or lower. In Iowa this corresponds to an average wet bulb depression or difference between the wet and dry bulb temperatures of about 6°. If this same Iowa air is heated to 180° F., its relative humidity is reduced to about 1% and the wet bulb depression will be about 96°. For purposes of illustration this Iowa air is considered to have an average dry bulb temperature of 50° and a wet bulb temperature of 44°.

If this air that has been heated to 180° is blown through a layer of shelled corn containing 27% moisture, the corn will quickly come to the wet bulb temperature of the air, or about 84°. It will remain at this temperature until it dries to about 24%. As the corn dries below 24% its temperature will increase to the wet bulb temperature associated with the equilibrium relativity of the grain moisture. When the corn has dried to about 13%, its temperature will be about 98°. If it is allowed to dry until it is in equilibrium with the 180° drying air, its temperature will be 180°.

The figures are approximations only. For simplification it has been assumed that the moisture leaves the whole kernel at the same rate. This is not true. As soon as drying begins, there is a gradient of moisture set up in the kernel so that the outer surface is drier than the interior, and similarly the outer surface will be warmer than the interior. When the average moisture of the kernel has reached 13%, the outer surface of the kernel will be warmer than 96° and the center will be cooler. Equilibrium moisture values are not well enough known and the pattern of moisture removal not well enough described to make better than rough approximations of these temperature relationships.

Drying Zone

When drying air is forced through a bed of grain with some velocity, the first layer of kernels this air reaches will begin to lose water by evaporation causing the temperature of the air to fall. The next layer will also lose water causing the temperature of the air to fall some more. This continues until the temperature of the air falls to its initial wet bulb temperature if the grain was initially of 24% moisture or wetter. The grain beyond this point or last layer in the drying zone will come to this wet bulb temperature but will not be drying. This drying zone then proceeds to move through the grain bed. If unheated or natural air is being used, the fan or blower is run until the drying zone has completely moved through the bed of grain. If heated air is used, such as the 180° air mentioned before, the drying process is stopped when the average moisture content of the bed has reached the desired level. The grain at the air entry will be over-dried while the grain at the air exhaust will not have

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Vitamin E is considered by many authorities to be an essential part of a nutritionally complete diet for chickens, turkeys, dogs, and other animals. We will be happy to send literature references on request.

The "d" means the vitamin E in *Myvamix Vitamin E Feed Supplement* is the same stereoisomer that appears in nature. 1 milligram of *d*-alpha-tocopheryl acetate is equivalent to 1.36 International Units of Vitamin E.

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CONTAINS distilled d-alpha-tocopheryl acetate concentrate absorbed on soy grits.
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The vitamin E in *Myvamix* is on a dry, non-dusting soy grits base. We use grits instead of meal because they have less fiber, less moisture, more protein, more uniform particle size, and are dusted to remove hulls and powder. All this means a higher quality product, one that's as easy to handle as anything in your mill.

With *Myvamix*, you know exactly how much vitamin E is in your feed. There's a sure 20,000 International Units of Vitamin E per pound. The cost is only a few dimes per ton of feed.

There are at least seven tocopherols which have some vitamin E activity. The most effective biologically is "alpha." That's what is in *Myvamix Vitamin E Feed Supplement*. (Only 10 to 15% of the tocopherols in corn is "alpha"—the rest is "gamma," one of the least effective of all.)

The "acetate" means that the vitamin E in *Myvamix* is really stable. Tests show no loss of potency even after storage in finished feeds for six months at 100 F. The full potency you put in the feed is there when the feed is fed.

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dried very much. The grain is then mixed as the drier is emptied so that it will equilibrate in a day or two in the storage bin.

The two methods of drying referred to are those used on the farms today—unheated or natural air drying in storage with grain beds of from 6 to 12 or 14 ft. in depth and air flow rates of 5 to 10 cfm per bushel, and heated air batch driers with grain beds of from 12 to 24 in. in depth and air flow rates of 50 to 100 cfm per bushel.

Continuous Flow Drier

There is another type of drier which is found primarily at the larger elevators and commercial grain dealers. This is the continuous flow grain drier which is generally a narrow column of grain through which heated air is passed back and forth. The grain in the column is in motion as wet grain is added to the top and dry grain removed from the bottom. This method produces uniformly dried grain under good management without the over-drying associated with the batch method.

Grain is a living organism. For many purposes it is essential that it not be killed. This is obviously true in the seed industry. For corn, work done at the Northern Utilization Research & Development Division, ARS, USDA, Peoria, Ill., indicates that excessive damage to the viability makes processing difficult for most of the corn processing industry. It is also possible that good viable grain will store better.

There are two or three factors in drying which can kill the grain. At the present time these factors have not been separated. They are the temperature of the drying air, the rate at which moisture is removed from the kernel, and the moisture range covered in the drying process. To date most recommendations are in terms of temperature only. The seed processor seldom allows temperatures of the drying air to go above 110°. Corn dried with air much above 130° may suffer excessive damage to germination, making processing difficult to impossible.

Dried for Feed

Corn that is dried for feed does not appear to be as sensitive to heat as that dried for the processor. Recent studies made by the chemists and agricultural engineers of the Agricultural Research Service, USDA, on the effect of mechanical drying on the protein nutritive value of field shelled corn indicate that no damage is done with drying air temperatures as high as 240° when 28% corn was dried in a typical batch drier in 90 minutes. This was accomplished with an air flow rate of about 110 cubic feet of air per minute per bushel of corn being dried. A complete description of this work can be obtained from the Agricultural Research Service, USDA, Beltsville, Maryland, by writing for the Technical Progress Report, ARS 44-41, November, 1958.

Recent work reported from the Agricultural Experiment Station of South Dakota State College on the effects of heated air drying of corn for poultry feed is in agreement with that done by the USDA. They found no ill effects from corn dried with temperatures up to 255°. They indicate that excessive drying to 6 or 8% moisture may reduce the value of the corn for feed. This of course does occur in the heated air batch drier. Some attempt to reduce this over-drying has been made by several of the heated air batch drier manufacturers by including means for turning the grain during the drying process. How well they have succeeded is not presently known. The continuous flow column driers or the in-storage unheated air driers would not be susceptible to such over-drying.

The moisture and temperature gradients set up in the kernel during rapid drying from high moisture may cause stresses to be set up which could cause cracking. This has long been a problem with the drying of rice. With corn it could possibly lead to weakened kernels which would break up badly with subsequent handling after drying. Work is now in progress at Iowa State University, Ames, to study this problem. It is suspected that the damage done by field shelling at high moistures may

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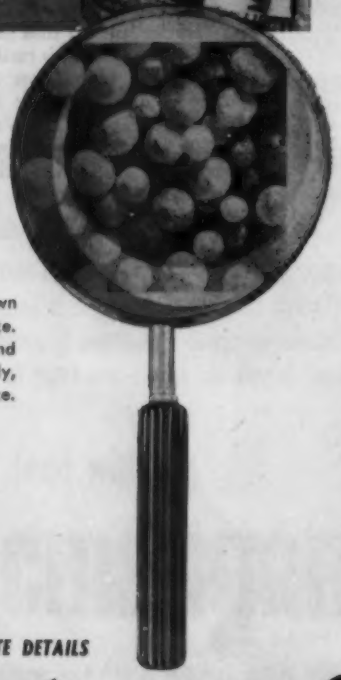

Micro-Prills shown 12 times actual size. The smooth round balls flow freely, don't cake.

Lehman Keith (*at right in photo*), owner of Hermitage Mill, Nashville, Tennessee, speaks with the voice of experience when he talks about Grace Micro-Prilled Urea Feed Compound:

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When *you* use an urea feed compound, you will find it pays to select the Grace brand. Its exclusive Micro-Prilling makes it truly free-flowing, assures an even, uniform mix throughout. See for yourself the difference Micro-Prilling makes.

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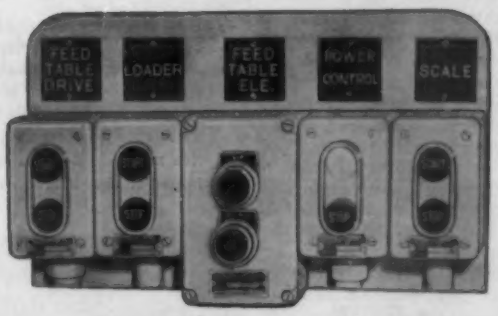

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Mr. W. E. Ackerman of Amboy Grain Company, Amboy, Indiana, says: "Doane 'Farming for Profit' is doing a good job for us. Our customers appreciate getting it."

Doane "Farming for Profit" is a powerful goodwill builder

Feed dealers find that their customers appreciate receiving complimentary copies of Doane "Farming for Profit." That is why so many of them use "Farming for Profit" as the primary activity in their service-type public relations programs aimed at building business through sounder agriculture. Doane "Farming for Profit" is an authoritative bulletin that capsules the thinking of some of America's best agricultural brains into easy-to-read information that farm folks can use to save money and make money.

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be more important in this respect than the possible damage during rapid drying.

Moisture Migration

Grain that has been mechanically dried should store as well as any other grain if it has been dried to safe storage moisture levels. Good storage of grain is dependent upon the moisture of the grain, freedom from insects, and whole sound grain that is clean. But even if all of these factors are observed at the time grain is placed in storage, trouble may still develop from moisture migration within the mass of grain.

Moisture migration is the result of slow moving convection currents of air within the mass of the grain caused by temperature differences. These differences are the result of seasonal temperature changes. When the atmospheric temperature drops in the fall of the year, the grain next to the bin walls becomes cool while the center mass of the grain remains warm. Due to the difference in densities of cold and warm air, a chimney effect is established which causes a flow of air down the walls and up through the center of the mass. As the cool air is drawn into the center of the mass, it is warmed up and its relative humidity is lowered. As has been said before, grain and air tend to come to a moisture equilibrium so the air as it warms up in the lower levels of the grain mass begins to pick up moisture. When this warm air approaches the grain surface it is cooled by the cool surface grain. Its relative humidity goes up and moisture moves from the air into the surface grain.

In the past the surface crusting and moisture build-up have been treated by stirring or by turning the grain into another bin. This is not only expensive because of mechanical damage to the grain, but it does not cure the trouble. The most satisfactory way to treat the problem is to cool the entire mass of the grain so that the forces causing convection currents and moisture migration are eliminated. This can be accomplished by aeration.

Aeration

Aeration is accomplished with equipment which makes it possible to draw air down through the center mass of the grain and cool it at about the same rate as the grain near the walls is cooled naturally. This equipment generally consists of a perforated duct or ducts in the floor which are connected to a blower capable of drawing from one-tenth to one-fiftieth of a cubic foot of air per minute per bushel of grain in the bin.

The power required will vary with the kind of grain and with the depth of the stored grain. One horsepower will aerate about 100,000 bu. of shelled corn at a depth of 20 ft. at a rate of one-twentieth cfm per bushel but will aerate only about 5,000 bu. of wheat at a depth of 100 ft. at the same air flow rate.

The Agricultural Marketing Service of the USDA has prepared a Marketing Research Report No. 178, Aeration of Grain in Commercial Storages, which may be obtained from the Superintendent of Documents, U.S. Gov. Printing Office, Washington 25, D.C. This report covers the selection of equipment and the operation procedures for most stored grains and geographic localities.

Two-Way Trucking Cuts Shipping Costs

BALLINGER, TEXAS — Vegetable growers of California and grain sorghum farmers of West Texas are cooperating to reduce shipping costs.

Many vegetable truckers coming into the Ballinger area are loading their trucks with grain for the return trip, thereby helping to open a market for grain sorghum on the West Coast. This also enables truckers to operate at a better-than-average profit.

Jack Fry, manager of the Co-op Gin & Elevator in Ballinger, says this two-way hauling has been a "life-saver" for the grain sorghum industry this year.

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The famous Ross Crimping Mill features all sizes to fit the need! Capacities from 50 to 150 bags per hour; can be set directly over sacker or bin. Compact; all steel; enclosed chain differential; adjustable stainless steel gate; positive tram & roll protection; see-thru inspection door in feeder case.

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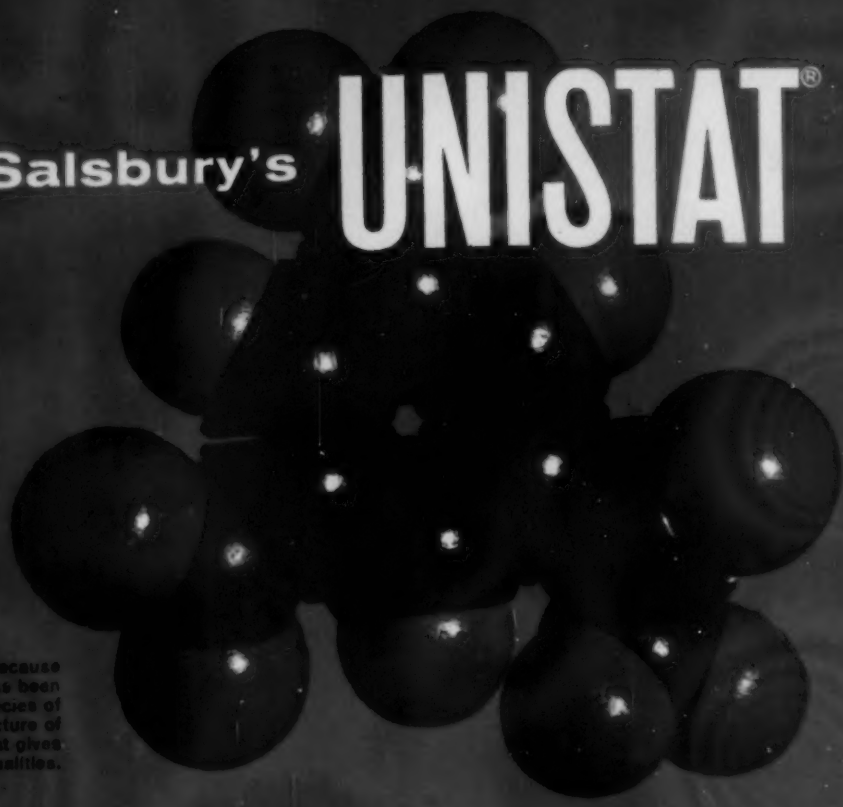
INCREASE YOUR TONNAGE

with additives that increase feed efficiency

Feed manufacturers and dealers alike are vitally interested in feed products that not only improve poultry and swine health but do so at a *substantial profit brought about by increased feed efficiency.*

This brochure describes several such products from Dr. Salsbury's Laboratories, where the practical side of farming is of primary concern. Their use can increase your tonnage by giving your feeds new profit benefits.

Dr. Salsbury's UNISTAT®



Unistat contains a combination of active ingredients because no compound, complex or other single chemical entity has been found to be equally effective against all important species of coccidia in chickens. Shown above is the molecular structure of *3, 5-Dinitrobenzamide*, the unique new chemical that gives Unistat its superior coccidiostatic qualities.

Unistat is a yellowish, free-flowing powder that blends easily and is compatible with all normal feed ingredients. It provides a "balanced protection" against the economically important forms of coccidiosis. Chemically, Unistat is a unique combination of active ingredients—drugs chosen for their specific effect in complementing each other. They work together as a team to provide far more disease protection and profit benefits than any single drug, chemical complex or compound. Unistat is recommended for **coccidiosis prevention, growth stimulation, improved feed efficiency** and **better pigmentation** in chicks and growing chickens. Best of all, its low cost and small dosage (1 lb. per 1,000 lb. of an all-mash ration) combine to make it one of the least expensive coccidiostats. Follow directions fully.

For Chicks,
Broilers, Growing Chickens
PREVENTS COCCIDIOSIS BEST PLUS OTHER PROFIT BENEFITS

- **INCREASES FEED EFFICIENCY**
- **STIMULATES GROWTH**
- **PERMITS IMMUNITY TO DEVELOP**
- **IMPROVES PIGMENTATION**

Grower experience is what counts, where a feed additive is concerned. That is, growers must *know* that Unistat not only controls coccidiosis but does so at *a substantial profit to them.* Then, and only then, should you use it in your feeds. In the last 12 months, Unistat has been fed to *over ½ billion birds.* The following letters are typical of many being received at Dr. Salsbury's Laboratories from large commercial poultrymen (names on request).

"*Our feed efficiency has improved more than 10 points over last year and coccidiosis is no longer a problem. We feel that the coloring, finish and quality of our birds has been greatly improved with Unistat. We are now using it in our ration 100%, but we field-tested a number of coccidiostats before making this change.*" (This grower raises a million birds a year).

"*This is the first flock of broilers I have ever grown without trouble from coecidiosis. They also had better color. I am completely satisfied with Unistat.*" (This flock averaged 43 lb. of gain per 100 lb. of feed).

"*Since switching to Unistat, I have had less trouble with coccidiosis, better weights and better feed conversion. My broilers show a definite improvement in color and quality. And medication costs have been less since I began using Unistat than for any comparable period since I've been in business.*" (This operator feeds out an average of 80,000 birds a week).

These Grower Experiences Are Why –

MORE AND MORE FEED MANUFACTURERS ARE SWITCHING TO UNISTAT

GET THE FULL STORY ON UNISTAT

Write, wire or phone for your copy of Dr. Salsbury's Feed Manufacturer's Guide on Unistat. It will tell you more about this new approach to coccidiosis control. Or, ask for a Dr. Salsbury representative to call and personally answer your questions about the use of Unistat in chicken starter, grower and broiler feeds.

Dr. Salsbury's 3-NITRO® for Chickens, Turkeys, Hogs

POWDER

STIMULATES GROWTH,
IMPROVES FEED EFFICIENCY,
GIVES GROWERS MORE
FOR THEIR FEED DOLLAR

Increases egg production

Every year sees a new all-time high in the number of commercial flocks that get 3-Nitro in their feed. Why? *Because experience and tests have shown its use to be highly profitable.* Tests have also shown that laying flocks average a dozen or more extra eggs per hen per year—and on ¼ lb. less feed per dozen eggs—when they get 3-Nitro in all their mash. Broilers have more "bloom"... layers have better health and appearance. There is less morbidity and flock depletion. 3-Nitro is safe, palatable, stable, and compatible with normal feed ingredients. (Follow 3-Nitro directions completely.)

All these . . . are reasons why growers say, "*No other feed ingredient does so much—and costs so little—as 3-Nitro*".

Reduces backfat

Swine raisers recognize 3-Nitro as a most valuable feed additive. Tests at Iowa State have shown that growing pigs average 16% heavier—*on 5% less feed*—with 3-Nitro in their ration. Fewer runts and better finish mean higher market prices. Recently, another important benefit was discovered: further research at Iowa State indicated 3-Nitro significantly reduces backfat, thus improving carcass leanness and enabling farmers to greatly speed up the production of meat-type hogs. With the entire swine industry working toward the leaner pork demanded by consumers, this new benefit is attracting even more farmers to 3-Nitro.

FEED MANUFACTURER'S GUIDE No. 13A answers many questions about the use of 3-Nitro in swine and poultry feeds. Write, wire or phone for your copy. Or, ask for a Dr. Salsbury's representative to call and discuss feed-formulating problems with you personally.

NEW HISTOSTAT®-50

PREVENTS BLACKHEAD BEST IN TURKEYS AND CHICKENS

Histostat-50 is a new formulation using the same proven active ingredient—4-nitrophenylarsonic acid—from the chemical family of compounds universally known for their growth-stimulating properties. Its new formulation permits the active ingredient to do its work more completely and efficiently—especially as birds approach market age or maturity. Histostat has been proven on millions of birds . . . to be the most effective blackhead preventive on the market today. When fed to healthy poults in brooder houses or on range, Histostat-50 provides unequalled protection against this No. 1 turkey disease. Follow directions fully.

Promotes better finish, higher market value

Winning 59 awards at the National Dressed Turkey Show is a remarkable achievement for birds fed Histostat. Of greater importance, however, is the **extra profit** which Histostat helps turkey raisers make. This makes champion birds where it counts—in the profit department. Histostat-50 not only prevents blackhead for pennies a bird but it *helps improve finish and carcass quality so birds bring more on the market.* That's why more and more growers are asking for Histostat-50 in their turkey feeds.

There's more to the Histostat-50 story

. . . than we can tell here. Write, wire or phone for your copy of Feed Manufacturer's Guide No. 16. Or, ask for a Dr. Salsbury representative to call and personally answer your questions about using Histostat-50.

- **PALATABLE.** Birds don't back away from Histostat-50.
- **ECONOMICAL.** Even on a continuous program, Histostat-50 costs only a few cents a bird—2 turkeys saved will pay for medication for 100.
- **COMPATIBLE.** Can be used with normal feed ingredients.
- **STABLE.** Histostat-50 is a chemically stable powder—will not lose its effectiveness during handling or storage. Unaffected by pelleting or other feed ingredients.

Dr. Salsbury's POLYSTAT®

A BROAD-RANGE HEALTH PROTECTANT FOR CHICKENS AND TURKEYS

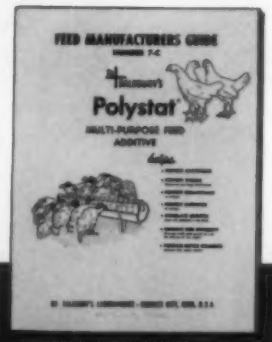
- **STIMULATES GROWTH**
- **INCREASES FEED EFFICIENCY**
- **PROTECTS AGAINST COCCIDIOSIS (all types), LARGE ROUNDWORMS, TAPEWORMS, TURKEY BLUECOMB AND HEXAMITIASIS**

Has Other Values

Polystat is a multi-purpose feed additive specially developed to provide today's poultry with the above much-needed benefits. Chickens and turkeys that get Polystat continuously in their feed grow faster, do better. This is important, but it is not the whole story. Polystat has other values. For example, Polystat reduces the amount of subclinical (inapparent) disease and minimizes the effects of stress. There is less mortality, less sickness and better all-around health and appearance, when feeds contain Polystat. In addition, Polystat eliminates the need for a separate coccidiostat, a separate wormer, and a separate growth stimulant in the feed. Follow directions.

Yes, there are many reasons for including Polystat in your chicken and turkey feeds. However, they all add up to the fact that today's poultrymen demand feeds that prevent a wide variety of diseases and conditions. **Polystat** is such a product . . . **a broad-range health protectant** that *cuts production costs, builds better birds, increases profitable returns.*

WRITE, WIRE OR PHONE . . . for more information about how to use Polystat to build superior poultry feeds. Ask for Feed Manufacturer's Guide No. 7-C. Or, ask for a Dr. Salsbury's representative to call in person.



Dr. Salsbury's WORMAL

THE ONLY COMPLETE POULTRY WORMER

Takes the guesswork out of hit-or-miss worming

Millions of dollars will be lost by growers next year, due to many species of poultry worms. Stopping roundworms is only a small start. A complete worm-control program requires a wormer that "gets all 3"—**tapeworms** and **cecal worms** as well as **large roundworms.** Unfortunately, no single drug is equally effective against these 3 major types of worms. And few growers are skilled at posting or diagnosis, so that the kind of worms might be incorrectly identified. Thus a grower runs the risk of wasting money by using the wrong worming compound. All this spells out the need for a complete, broad-range wormer—one that gets all 3 types of worms. Wormal is such a wormer. *It is the only wormer that gets all 3*—takes the guesswork out of worming!

Other advantages of Wormal

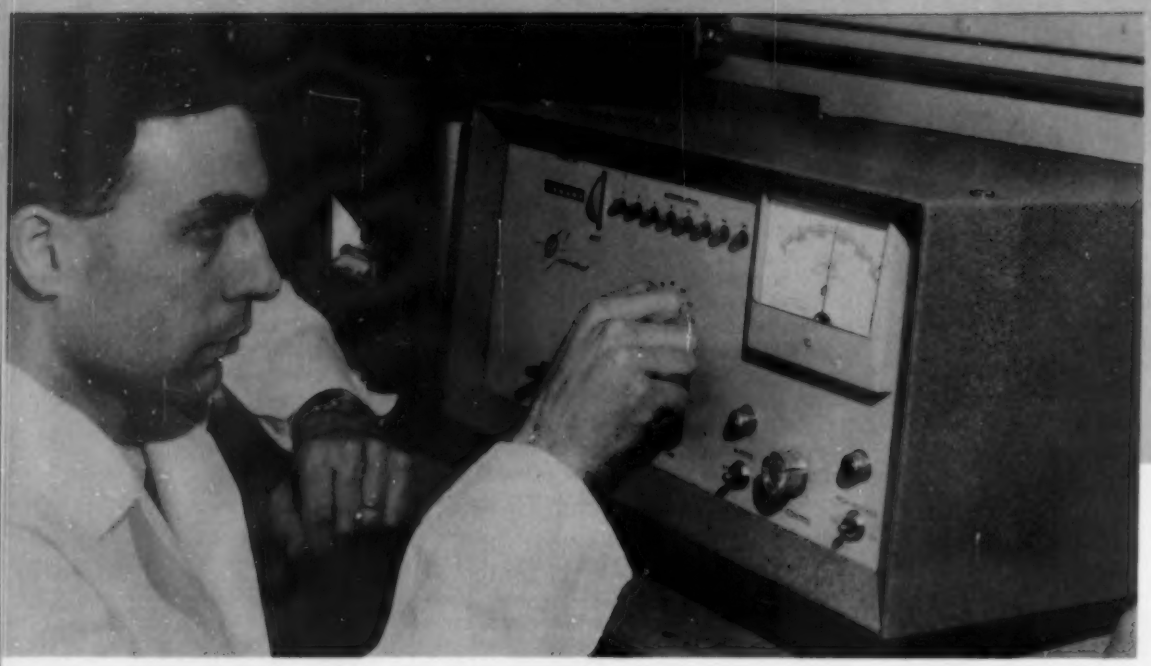
1. **Easy to handle.** Wormal Granules are crumblized for easy mixing or may be added to feeds prior to pelleting.
2. **Easy to feed.** Wormal fits most feeding programs—all mash, or controlled mash-and-grain.
3. **Wormal is safe,** causing no shock or setback.
4. **Palatable.** Feed mixtures containing Wormal are readily eaten by chickens and turkeys.
5. **One standard dose.** One pound of Wormal treats 250 birds of any age. Mix at rate of 20 lb. per ton of mash.

FOR...COMMERCIAL FLOCKS, UTILITY FLOCKS, AND TURKEYS

FIND OUT NOW ... more about Dr. Salsbury's Wormal. Write, wire or phone for Feed Manufacturer's Guide No. 17 and 12-page booklet (shown here) on "How to make and merchandise your own worming feed for poultry". Or, ask that a Dr. Salsbury representative call in person. He'll be glad to show you how the new Wormal promotion plan can help you sell more feed.

SEARCHING...

for better ways to serve the Feed, Poultry and Swine Industries



Strong as they are today, tomorrow's feed, poultry and swine industries will be even more efficient, due to around-the-clock research now going on in laboratories and experimental farms all over the country. Modern feed-additive health products are constantly being improved or replaced by new ones. Competition is a fact of life—in our free economy. Thus the search goes on, because today's best is never quite good enough for tomorrow.

As you know, thorough testing is a vital part of all new product development. Shown above is an atomic scaling unit—part of the apparatus used at Dr. Salsbury's Laboratories for the radio-active tracer testing of drug residues. Such techniques are typical of our never-ending search for better products and for better ways to serve those industries whose destinies we share.

No attempt has been made in the preceding pages to "cover all bases" on the subject of increasing feed tonnage through the use of superior feed additives. It is too big a job. Besides, most feed-formulating problems can best be solved on an individual basis only.

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NATIONWIDE SERVICE TO THE FEED INDUSTRY

Maine Publication Summarizes Competition Factors Affecting Broiler Producing Areas

ORONO, MAINE—Factors related to the competition among the various broiler producing areas in the U.S. are discussed in a recent Maine Agricultural Experiment Station publication entitled, "Competition Among Areas in Supplying Broilers to the New York Market."

A summary of the publication's contents follows:

Much interest has developed among segments of the broiler industry as to its probable future. Will it continue to expand? If so, at what rate and what areas are most favored for an expansion? These and other important questions resulted in the development of this study.

Many factors are responsible for the rapid expansion of the broiler industry in the U.S. from 356 million birds in 1948 to 1,452 million in 1957. Among these factors are larger units of production, greatly improved feeds, better disease control and increased consumer demand for broilers.

Leading states in broiler production are Georgia, Arkansas, North Carolina, Alabama and Texas. Each of these states produced 100 million or more broilers in 1957. The New England area, especially Maine, and the Delmarva Peninsula were important areas along the Atlantic seaboard with about 100 million broilers in New England and over 200 million in Delmarva.

With the per capita consumption at one half the trend rate (rate from 1950 to 1958) and the median population prediction, the broiler requirement would be 3,922 million lb. for 1960, 6,063 million lb. for 1970 and 7,326 million lb. for 1975. This would represent 183% increase in pounds of the broilers required for 1975.

Broiler production is highly integrated in the three areas: New England, Delmarva and Georgia. Forty-five per cent of the feed dealers, 36% of the processing plants and 30% of the hatcheries in the three areas have some type of contract with farmers for growing broilers.

The average size of broiler lots in New England for 1957 was 11,455 birds, Delmarva averaged 10,640 birds and the Georgia area 5,644 birds. The average mortality rates for the three areas were 2.4%, 2.6% and 5.7% respectively.

The average live weight of broilers produced in the New England area in 1957 was 3.5 lb. as compared with 3.2 lb. in Delmarva and 3.1 lb. in the Georgia area. The age at which live broilers were sold in 1957 averaged 72 days for the New England area, 66 days for Delmarva and 63 days for the Georgia area.

Feed Conversion

Average feed conversions were estimated from information obtained from processors and feed dealers in each of the three areas for the equivalent of a 3.5 lb. live broiler. In the New England area feed conversion for this weight broiler was 2.75 as compared with 2.77 for Delmarva and 2.74 for the Georgia area.

The major costs in producing broilers in the three areas are baby chicks, feed, labor, buildings, equipment and fuel. Average prices for broiler type chicks obtained from replies to questionnaires received in this study from processors, hatcheries and feed dealers were 12.9¢ a bird for the New England area, 12¢ for Delmarva and 12.4¢ for the Georgia area.

Using estimated cost of standardized feed ration and feed conversion rates for each of the three areas gives an estimated cost of feed to produce a 3.5 lb. live broiler. In the New England area the feed cost for 1957 was 39.4¢, Delmarva 38.7¢ and Georgia 37.9¢. The estimated labor cost for a 3.5 lb. broiler was 5.6¢ in the New England area, 5.0¢ in Delmarva and 4.5¢ in the Georgia area. The cost of buildings and equipment averaged 4.6¢, 3.9¢ and 2.9¢ respectively for the three areas.

The estimated fuel cost was based on two-floor houses in the New England area and one-floor buildings in the other two areas. On this basis the cost per 3.5 lb. broiler in New England was 2.5¢, 2.4¢ in Delmarva and 1.3¢ for the Georgia area. Total cost of producing a 3.5 lb. broiler in the New England area was 67.3¢ as compared with 64.3¢ in Delmarva and 61.3¢ in the Georgia area.

The estimated average cost of collecting and transporting live broilers from farms to dressing plants was .7¢ lb. in the New England area, .8¢ in Delmarva and .9¢ in the Georgia area.

On the basis of very limited information, the cost of eviscerating 100% of the broilers received by a processor is expected to be about 5.2¢ lb. and 25% of the cost of production for shrinkage between live weight and eviscerated weight (based on the equivalent of eviscerated 3.5 lb. live broiler). It is impossible with present information to show the variations in costs by areas.

The average cost of transporting dressed broilers to New York City from central Maine was reported at .70¢ lb., from Delmarva .45¢ and from Georgia 1.92¢.

The combined estimated costs of producing, processing and transporting eviscerated broilers to the New York City market per pound (3.5 lb. equivalent live weight) are 32.4¢ for the New England area, 31.2¢ for Delmarva and 31.6¢ for the Georgia area.

Wholesale prices reported on the New York City market for the same period were 34.2¢ lb. for Maine broilers and 31.9¢ lb. for broilers from other areas.

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Convention Calendar

New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear separately from ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

● ● ●

Oct. 8—Fall Feeders Day; North Platte Experiment Station, North Platte; Prof. W. J. Loeffel, Animal Husbandry Dept., University of Nebraska, Lincoln.

Oct. 9—Montana Cattle Feeders Day; Montana State College, Bozeman; Dr. O. O. Thomas, Department of Animal Industry.

Oct. 22—North Dakota Turkey Federation; American Legion Hall, Cooperstown; sec., Irving J. Mork, Department of Poultry Husbandry, North Dakota Agricultural College, State College Station, Fargo.

Nov. 4-5—Kansas Poultry Assn.; Broadview Hotel, Wichita; sec., Harry J. Reed, Box 663, Manhattan, Kansas.

Nov. 11-13—Cornell Nutrition Conference; Hotel Statler, Buffalo, N.Y.; chm., Dr. M. L. Scott, Poultry Husbandry Department, New York State College of Agriculture, Cornell University, Ithaca, N.Y.

1960

Feb. 2-4—American Dehydrators Assn.; Broadmoor Hotel, Colorado Springs; exec. vice pres., Joseph Chrisman, 430 Board of Trade Bldg., Kansas City 5, Mo.

Sept. 13-14—Grain and Feed Dealers National Assn. (work meeting for directors, committees and members), Pick-Nicollet Hotel, Minneapolis; exec. vice pres., Alvin E. Oliver, 400 Folger Bldg., Washington 5, D.C.

Sept. 14-15—Minnesota Animal Nutrition and Health Short Course; University of Minnesota, St. Paul 1; chm., Dr. J. O. Christianson, Department of Agricultural Short Courses.

Sept. 15-16—Mutual Millers & Feed Dealers Assn.; Jamestown, N. Y.; sec., Margaret Bentley, 41 Chautauqua Ave., Jamestown, N.Y.

Sept. 15-17—Dixie Poultry Exposition, Asheville, N.C.; sec., N. B. Nicholson, Monroe, N.C.

Sept. 17—Illinois State Turkey Growers Assn., farm of Clarence Ziemer, Elmwood, Ill.; sec., S. B. Swann, Kauffman Turkey Farms, Waterman, Ill.

Sept. 17-18—Arkansas Formula Feed Conference; University of Arkansas, Fayetteville; chm., Dr. E. L. Stephenson, Department of Animal Industry.

Sept. 18—College-Feed Industry Conference; Iowa State College, Ames; chm., Prof. Emmit Haynes, Animal Husbandry Dept.

Sept. 21—Illinois Egg Council; Illinois Building, State Fair Grounds, Springfield, Ill.; sec., Scott Hinners, Southern Illinois University, Carbondale.

Sept. 21-22—Seventh and Eighth Areas, National Renderers Assn.; Cosmopolitan Hotel, Denver; sec., R. Fleming, Seventh Regional Area, Box 615, Des Moines, Iowa.

Sept. 23—Minnesota Beef-Grassland Field Day; Rosemount Experiment Station, Rosemount, Minn.; chm., Dr. J. O. Christianson, Department of Agricultural Short Courses, University of Minnesota, St. Paul 1.

Sept. 23—Vermont Feed Dealers and Manufacturers Assn.; University of Vermont, Burlington, Vt.; sec., D. C. Henderson, Hills Agricultural Science Building, Burlington, Vt.

Sept. 23-25—Feed Production School; Continental Hotel, Kansas City; sponsored by Feed Production School, Inc.; pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Sept. 24-26—Pennsylvania Millers & Feed Dealers Assn.; Yorktowne Hotel, York, Pa.; sec., Donald W. Parke, P.O. Box 329, Ephrata, Pa.

Sept. 26—Small Mill Short Course; Continental Hotel, Kansas City; sponsored by Feed Production School, Inc.; pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Sept. 29-30—Pacific Northwest Garden Supply Trade Show; Masonic Temple, Portland, Ore.; mgr., Russ Hays, 702 Lewis Bldg., Portland, Ore.

Oct. 1-2—National Feed Ingredients Assn.; Pick-Congress Hotel, Chicago, Ill.; sec., Peter W. Janss, 212 Equitable Bldg., Des Moines, Iowa.

Oct. 6-8—Northeastern Poultry Producers Council Exposition and Convention; Farm Show Building, Harrisburg, Pa.; chm., Alfred Van

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Oct. 7-9—Texas Nutrition Conference; Texas A&M College, College Station; chm., Dr. J. R. Couch, Department of Poultry Science.

Oct. 8-9—Alabama Animal Nutrition and Management Conference; Duncan Hall, Alabama Polytechnic Institute, Auburn; sponsored by Alabama Feed Assn., sec., Merlin Bryant, Brundidge Milling Co., Inc., Brundidge, Alabama.

Oct. 11-14—Kentucky Poultry Federation and Kentucky Poultry Improvement Assn.; Cumberland Falls State Park, Corbin; sec., John W. Tuttle, 730 Rose St., Lexington, Ky.

Oct. 14—Animal Nutrition Research Council; Shoreham Hotel, Washington, D.C.; sec., Irwin Olcott, Dawe's Laboratories, Inc., 4800 S. Richmond St., Chicago 32, Ill.

Oct. 14-15—Association of American Feed Control Officials; Shoreham Hotel, Washington, D.C.; sec., Bruce Poundstone, Agricultural Experiment Station Bldg., University of Kentucky, Lexington, Ky.

Oct. 15-16—Michigan Feed & Grain Dealers Assn.; Kellogg Center, Michigan State University, East Lansing, Mich.; sec., Nevels Pearson, P.O. Box 472, East Lansing, Mich.

Oct. 19-20—Beef Research Conference (attendance by invitation); Purdue University, Lafayette, Ind.; sponsored by Agricultural Research Institute and National Academy of Sciences-National Research Council; Dr. C. B. Cox, Agricultural Economics Department, Purdue University.

Oct. 19-20—California Animal Industry Conference; Fresno Memorial Auditorium, Fresno, Cal.; sponsored by California Hay, Grain & Feed Dealers Assn. and University of California; chm., Berton Maxwell, Poultry Producers of Central California, Petaluma.

Oct. 20-21—Virginia State Poultry Federation; Hotel John Marshall, Richmond, Va.; sec., J. Paul Williams, 615 E. Franklin St., Richmond 19, Va.

Oct. 22-23 — Annual Stockholders Meeting, Cooperative G.L.F. Exchange, Inc., Onondago County War Memorial Building, Syracuse, N.Y.

Oct. 22-23—Iowa Seed Dealers Assn.; Savery Hotel, Des Moines; sec., Bob Skinner, 928 Des Moines Bldg., Des Moines 9, Iowa.

Oct. 23—Arkansas Poultry Study Day; University of Arkansas, Fayetteville; Prof. Robert M. Smith, Department of Animal Industry and Veterinary Science.

Oct. 29—Nebraska Feed & Nutrition Conference; University of Nebraska, Lincoln; chm., Dr. John Adams, Poultry Husbandry Department.

Oct. 29-30—West Virginia Feed Dealers Assn.; Blackwater Falls Lodge, Davis; sec., J. S. Larrick, Beckley Ice & Feed, Beckley, W. Va.

Oct. 30—Rooters Day; University of Nebraska, Lincoln; Dr. E. R. Peo, Animal Husbandry Department.

Oct. 30—Illinois Sheep Producers Day; University of Illinois, Urbana; chm., Dr. U. S. Garrigus, Department of Animal Science.

Nov. 1-4—Mississippi Poultry Improvement Assn., Biloxi; Dean & Director, Division of Agriculture, Mississippi State University, State College, Miss.

Nov. 4-5—Illinois Feed Assn. and Illinois Poultry Improvement Assn., joint convention; Armory, Springfield, Ill.; IFA, Leland Hotel; sec.,

CALENDAR FOR 1959-60

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Dean M. Clark, Board of Trade Bldg., Chicago; IPIA, St. Nicholas Hotel; sec., Aubrey Hariess, Box 91, Shelbyville, Ill.

Nov. 4-7 — National Renderers Assn., Hollywood Beach Hotel, Hollywood Beach, Fla.; sec., Miss Jamie Fox, 30 N. La Salle St., Chicago 2, Illinois.

Nov. 5-6—Florida Nutrition Conference; Medical Center Auditorium, University of Florida, Gainesville; sponsored by Florida Feed Dealers Assn. and Florida Agricultural Experiment Station; chm., Dr. J. P. Feaster, Department of Animal Husbandry and Nutrition.

Nov. 6-7—Oklahoma Formula Feed Conference; Oklahoma State University, Stillwater; chm., Dr. Rollin H. Thayer, Poultry Science Department. Jackson Blvd., Chicago 4, Ill.

Nov. 12-13—Cornell Nutrition Conference; Hotel Statler, Buffalo, N.Y.; chm., Dr. F. W. Hill, Poultry Husbandry Dept., Cornell University, Ithaca, N.Y.

Nov. 13-14 — Oregon Sheep and Wool Days, Oregon State College, Corvallis; chm., Dr. C. W. Fox, Dairy & Animal Husbandry Dept.

Nov. 16—Tennessee Feed Manufacturers Assn., Claridge Hotel, Memphis, Tenn.; sec., Charles H. Warfield, American Trust Bldg., Nashville, Tenn.

Nov. 16-17—Washington Animal Industry Conference; Yakima Junior College, Yakima, Wash.; John G. Wilson, Washington State Feed Assn., Inc., 814 Second Avenue Bldg., Seattle 4.

Nov. 18—School for Poultry Servicemen; University of New Jersey, Agricultural Experiment Station, New Brunswick; chm., R. L. Squibb, Department of Poultry Science.

Nov. 19-20—National Swine Industry Conference; Iowa State University, Ames; chm., Keith Myers, National Swine Growers Council, Grundy Center, Iowa.

Nov. 21—Missouri Sheep Day, University of Missouri, College of Agriculture, Columbia; C. V. Ross, Department of Animal Husbandry.

Nov. 22-24—Western Grain & Feed Assn. of Iowa; Fort Des Moines Hotel, Des Moines, Iowa; sec., Bob Skinner, 928 Des Moines Bldg., Des Moines 9, Iowa.

Nov. 27-28—American Society of Animal Production; Sherman Hotel, Chicago, Ill.; sec., Dr. H. H. Stonaker, Colorado State University, Ft. Collins, Colo.

Nov. 30-Dec. 1—Midwest Veterinary Nutrition Conference; President Hotel, Kansas City; sec., Lloyd Larson, Midwest Feed Manufacturers Assn., 20 W. 9th Street Bldg., Kansas City 5, Mo.

Dec. 2—Ontario Retail Feed Dealers Association; King Edward Sheraton Hotel, Toronto; sec., Murray McPhail, 69 Yonge Street, Toronto.

Dec. 3-4—North Carolina Animal Nutrition Conference; North Carolina State College, School of Agriculture, Raleigh; chm., E. R. Barrick, Head, Animal Husbandry Section.

Dec. 4-5 — Arkansas Turkey Convention and Show; Berryville, Arkansas; sec., Charles D. Hawks, P. O. Box 1446, Little Rock.

Dec. 7-9—Minnesota Poultry Assn., Radisson Hotel, Minneapolis; sec., L. L. Baumgartner, Litchfield, Minn.

Dec. 8-9 — Poultrymen's Service Clinic; Cornell University, Ithaca, N.Y.

1960

Jan. 4-5—Kansas Formula Feed Conference; Kansas State University, Manhattan, Kansas.

Jan. 4-8 — Retail Feed Dealers Training School; University of Minnesota, St. Paul; Dr. J. O. Christianson, Director of Agricultural Short Courses, Institute of Agriculture, St. Paul 1.

Jan. 5-7—National Turkey Federation; Hotel Leamington, Minneapolis; sec., M. C. Small, P.O. Box 69, Mt. Morris, Ill.

Jan. 17-19—Indiana Grain & Feed Dealers Assn.; Claypool Hotel, Indianapolis, Ind.; sec., Fred K. Sale, 600 Board of Trade Building, Indianapolis, 4, Ind.

Jan. 25-27 — Southeastern Poultry & Egg Assn.; Municipal Auditorium, Atlanta, Ga.; sec. Harold E. Ford, 235 E. Ponce de Leon Ave., Decatur, Ga.

Feb. 4-5—Oregon Animal Industry Conference; Oregon State College, Corvallis, Ore.; chm., Dr. J. E. Parker, Poultry Husbandry Department.

Feb. 8-9—Montana Nutrition Conference; Montana State College, Bozeman; chm., Dr. O. O. Thomas, Animal Industry Dept.

Feb. 8-9—Midwest Feed Manufacturers Assn.; Muehlebach Hotel, Kansas City; exec. vice pres., Lloyd Larson, 20 W. 9th St. Bldg. Kansas City 5, Mo.

Feb. 10-11—Pacific Northwest Feed Mill Production School; Chinook Hotel, Yakima, Wash.; sponsored by Washington State Feed Assn., mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4, Wash.

Feb. 11—Boston Grain and Flour Exchange Annual Banquet; Sheraton-Plaza Hotel, Boston; chm., Paul Sutliff, 177 Milk St., Boston, Mass.

Feb. 12—Washington State Feed Assn.; Chinook Hotel, Yakima, Wash.; annual convention; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4, Wash.

Feb. 12-14—Fact Finding Conference, sponsored by the Institute of American Poultry Industries; Municipal Auditorium, Kansas City, Mo.; pres., Harold M. Williams, 59 East Madison, Chicago, Ill.

Feb. 21-23—Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo; sec., G. E. O'Brien, 694 N. Ohio Street, Greenville, Ohio.

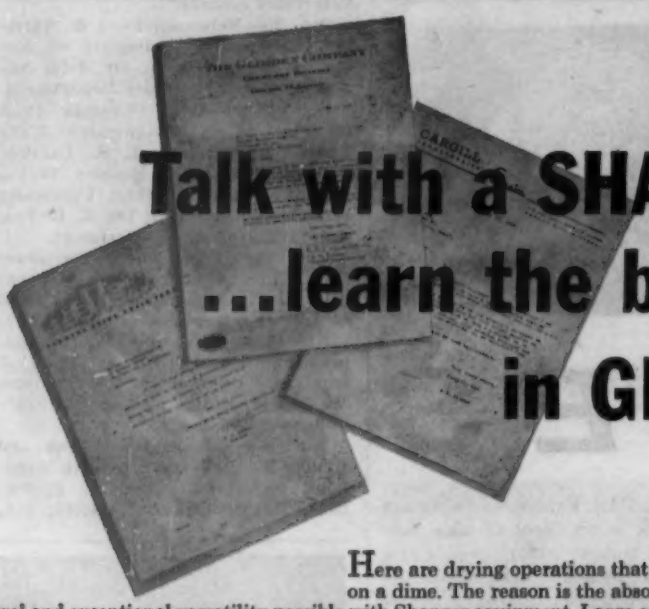
Feb. 23-24—Virginia Feed & Nutrition Conference; Hotel Roanoke, Roanoke; J. Paul Williams, sec., Virginia State Feed Assn., 615 E. Franklin St., Richmond, Va., or Prof. Paul M. Reaves, Department of Dairy Science, Virginia Polytechnic Institute, Blacksburg, Va.

March 7-8—Grain & Feed Dealers National Assn.; Hotel Muehlebach, Kansas City; sec., Herbert L. Sharp, 400 Folger Bldg., Washington 5, D.C.

March 17-18—Oregon Feed & Seed Dealers Assn.; New Sheraton Hotel, Portland, Ore.; mgr., Russ Hays, 702 Lewis Bldg., Portland, Ore.

Mar. 17-18—Maryland Nutrition

(Turn to Page 89)



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March 23—Distillers Feed Conference; Sheraton Gibson Hotel, Cincinnati; sponsored by Distillers Feed Research Council; exec. director, Dr. Lawrence E. Carpenter, 1232 Enquirer Bldg., Cincinnati, Ohio.

April 1-2—Texas Grain & Feed Assn., Shamrock Hotel, Houston; sec., Ray B. Bowden, 407 Fort Worth Club Bldg., Ft. Worth 2, Texas.

April 5-7—Nebraska Grain & Feed Dealers Assn.; Pershing Municipal Auditorium, Lincoln; sec., Howard W. Elm, Trust Bldg., Lincoln, Neb.

April 11-13—Poultry and Egg National Board, LaSalle Hotel, Chicago, Ill.; mgr., Floyd Gell, 8 S. Michigan Ave., Chicago 13, Ill.

April 21-23—California Hay, Grain & Feed Dealers Assn., Ambassador Hotel, Los Angeles; sec., John Gilmore, Blue Anchor Bldg., 1400 10th St., Sacramento 14, Cal.

April 21-23—Kansas Grain & Feed Dealers Association; Broadview Hotel, Wichita, Kansas; sec., Orris E. Case, 609 Wiley Bldg., Hutchinson, Kansas.

April 22 — Nebraska Livestock Feeders Day; University of Nebraska, College of Agriculture, Lincoln; chm., Wm. J. Loeffel, Animal Husbandry Dept., Lincoln 3, Neb.

May 9-11—American Feed Manufacturers Assn.; Conrad Hilton Hotel, Chicago; sec., W. T. Diamond, 53 W. Jackson Blvd., Chicago 4, Ill.

'Midwest Will Stay in The Egg Business'

WICHITA, KAN. — "The Midwest Will Stay in the Egg Business" is scheduled for discussion by a panel at the Silver Anniversary Convention of the Kansas Poultry Assn. Nov. 4-5, Wichita.

The panel will be moderated by Rod Turnbull, editor of Weekly Star Farmer. Other panel members will include Tom Avery, head of the Kansas State University poultry department; Bob Axelson, Staley Milling Co.; Joe Claybaugh, DeKalb Agricultural Assn.; Eustace Coombs, J. O. Coombs & Son; Miller Manford, first vice president, American Poultry & Hatchery Federation.

The convention will be held in the Broadview Hotel.

Dow Chemical Reports Increased Earnings

MIDLAND, MICH. — The Dow Chemical Co. recently reported sales of $705,442,403 and earnings after taxes of $62,916,016 for the fiscal year ended May 31. The net amounted to $2.39 per share on 26,357,090 shares of Dow common stock outstanding.

Sales the previous fiscal year totaled $636,201,143, and earnings after taxes were $46,059,181, with net amounting to $1.78 per share on 25,877,131 shares.

Chemicals accounted for 51% of Dow's sales, plastics 35%, magnesium 8% and agricultural chemicals 6%. Approximately $70 million of the 1959 sales revenue was from products introduced within the past six years, and of this group 17 had sales of $1 million or more.

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Iowa Restates Rules On Adding Drugs to Custom Mixed Feeds

DES MOINES—The Iowa Department of Agriculture recently restated its regulations regarding the mixing of feeds containing drugs to the specific order of customers as an attempt to clear up some misunderstandings.

I. Levin, state chemist, said the department will not object to the addition of drugs to custom feeds providing: (1) The drugs have been cleared for addition to mixed feeds, (2) they are added at permitted levels, (3) combinations of drugs used are permitted and added at permitted levels and (4) the drugs are not in the "new drug" status.

He listed the following drugs as those not permitted in custom feeds: Arsenosobenzene; bithionol and methiotriazamine; dienestrol diacetate; diethylstilbestrol; hygromycin B (levels 42,000 units and above); nicarbazin; 2-acetyl-amino-5-nitrothiazole; 2,4 diamino-5 (p-chlorophenyl) 6-ethylpyrmidine; 3,5 dinitrobenzamide; glycarbylamide; hydroxazine hydrochloride; nystatin; nithiazide, oleandomycin chloroform adduct and p-ureidobenzenearsonic acid.

"Permitted drugs may be added only to complete feeds," Mr. Levin said. "The drugs must be efficacious for the intended purposes."

The state official further advised feed manufacturers that a label must be furnished to the purchaser and this label must correspond to the appropriate medicated feed label format, with the exception that in lieu of the guaranteed analysis and list of ingredients the pounds of each item in the mixture must be stated. Mr. Levin said each label must include directions for use and warning against misuse.

No double labeling is permitted. Custom feeds may not be stocked ahead of time, Mr. Levin said, but the Iowa Department of Agriculture would not object to a 12-18 hour delivery delay.

Jury Awards Rancher $9,693 in Feed Case

ROSWELL, N.M.—A jury recently ruled here that a New Mexico rancher should collect $9,693.90 in damages from the Mitchell Seed & Grain Co., Roswell.

The rancher, Leslie Bates, testified that 324 head of cattle, including bulls, heifers and calves, had died after being fed a grain mixture manufactured by the feed company.

Further testimony alleged that the feed may have contained an excess of urea. A Carlsbad veterinarian diagnosed the cattle deaths as urea poisoning after performing an autopsy on a calf. It was testified also that an analysis in a hospital showed there was an excess of urea in the calf's blood.

One witness, Dr. C. K. Whitehair, professor of veterinary medicine and animal nutrition, Michigan State University, said not over one third of the protein in feed should be derived from urea. Fat cattle can tolerate more than drouth-stricken cattle, he said, and feed should be high in grain and carbohydrates when it contains urea.

In Dr. Whitehair's opinion, anything in excess of 20 gm. of urea a day could cause a toxic condition in drouth-stricken cattle.

While Dr. Whitehair testified that improper mixing of feed could cause toxicity, another witness, Dr. W. W. Repp, animal nutritionist, New Mexico University, said the mixing did not vary enough to have caused the deaths.

After hearing closing arguments, the jury was instructed to declare in favor of Mr. Bates if, in the jury's opinion: (1) The feed contained more than one third protein tolerance; (2) drouth-stricken cattle were more susceptible to urea poisoning and the feed company failed to notify the plaintiff of this fact, (3) the ranch was overgrazed and (4) the grain in the mix was insufficient for drouth-stricken cattle.

Also, the jury was to consider if the pellets were prepared so that the livestock would not eat the feed and if there was an implied warranty that the feed contained 17% protein.

The jury awarded Mr. Bates $8,250 for loss of cattle, $538.90 for veterinary and other expenses, $776 for the feed he bought and $129 for miscellaneous related expenses.

Golf Outing Planned

STOCKTON, CAL.—The Stockton Grain Exchange plans to sponsor its first golf tournament Oct. 2 at the Woodbridge Golf & Country Club on the Mokelumne River, Woodbridge, Cal. Activities will be open to all members, special members, honorary members and guests. The outing is under the direction of Jerry Swendsen, Luke Eales, Bob Strawn and Yolland Johnson.

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Through reducing disease incidence and maintaining feed consumption, HEPZIDE helps poults make consistent gains in weight... helps growers finish their birds with profitable feed conversion ratios.

Benefits of Preventive Program. The most practical and economical approach to the problem of blackhead and hexamitiasis is the *continuous* use of feeds medicated with HEPZIDE. Prophylactic levels of this compound will help check tissue damage and mortality as a result of these diseases, *and your growers market heavier birds at an earlier age.*

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How Ingredients Affect Pigmentation Of Broilers Studied by Texas Scientist

COLLEGE STATION, TEXAS—An article discussing the effect of a number of feed ingredients and additives on broiler pigmentation was published recently as a Texas Feed Service Report by the Texas Agricultural Experiment Station. What Woodie P. Williams, research assistant, department of poultry science, Texas A&M College, wrote about the subject follows:

"The emphasis on high energy broiler rations has placed a priority on feeds low in fiber and high in productive energy content. Consequently, it has become desirable to reduce the amount of high fiber feedstuffs from the broiler formula. It usually is desirable from a price standpoint in this area to include grain sorghum, which contains no xanthophyll, in broiler rations. Since alfalfa meal, which usually is high in xanthophyll, has been reduced and grain sorghum has been increased in the diets of broilers, the problem of obtaining adequate pigmentation in broilers has become greater.

"Broiler producers have become interested in pigmentation of broilers because processors in some areas often pay 1@2¢ lb. more for properly pigmented birds.

Antioxidants

"The addition of antioxidants (BHT and Santoquin) to feedstuffs, such as alfalfa meal, to reduce the destruction of certain vitamins and other essential ingredients has made possible higher quality feedstuffs for broiler diets. Several reports indicate that antioxidants improve the pigmentation of broilers when fed at a level of one fourth pound per ton by preventing the destruction of the xanthophyll.

"However, recent work at the Texas Agricultural Experiment Station indicates antioxidants have no measurable effect on pigmentation, body weight or feed conversion when fed at levels of one fourth to one pound per ton.

"Apparently, the incorporation of an antioxidant, such as BHT or Santoquin, to feedstuff containing xanthophyll prior to mixing the complete ration is satisfactory and the subsequent addition of antioxidants has not proved beneficial in improving pigmentation of broilers. The addition of 20,000 I.U. of vitamin E per ton improved liver storage of vitamin A, but had no effect on pigmentation. BHT and Santoquin had no effect on liver vitamin A storage.

Finishing Rations

"In most instances, a grower ration with a calorie-protein ratio of 42:1 and a finisher ration with a ratio of 50:1 are used in broiler diets. The finisher ration contains more energy and less protein and is designed to produce a bird with adequate finish. The finisher ration usually contains additional xanthophyll for pigmentation.

"Work at the Texas Agricultural Experiment Station has shown that broilers with adequate pigmentation may be obtained by feeding the feedstuffs containing xanthophyll only during the 2½ or 3-week period prior to marketing. Feedstuffs containing xanthophyll, such as yellow corn, corn gluten meal and alfalfa meal, may be removed from the ration completely until the chicks are at least 4-5 weeks old and adequate pigmentation obtained by adding a good supply of feedstuff containing xanthophyll during the last 2½ or 3 weeks period prior to marketing.

"The addition of certain grades of animal fat or blends of animal and vegetable fats to broiler diets in an effort to increase the energy content and improve feed conversion has become a common practice in the manufacturing of poultry feeds. However, the addition of the various fats often has been made with little discrimination as to the effect on pigmentation.

"Recent work at the Texas Agricultural Experiment Station indicates that some fats exert an inhibitory effect on pigmentation. When 20% animal fat, soybean oil, corn oil and cottonseed oil were added to a basal ration, in which a constant calorie-protein ratio and xanthophyll content were maintained, pigmentation and liver vitamin A were decreased. However, the use of poultry oil at a comparable level did not depress pigmentation, but did increase storage of liver vitamin A. Poultry oil was equal to the vegetable oils and significantly better than animal fat when compared on the basis of body weight and feed conversion data.

"Additional work has indicated some of the fats and oils that may reduce pigmentation when added to broiler diets at the 5% level.

"A cold-pressed fish oil was a very potent pigmentation inhibitor. The addition of 4.5% of the fish oil to a finisher ration resulted in almost a complete bleaching of the yellow color from the shanks and skin of broilers. Subsequent experiments showed that the addition of .025% Santoquin, .025% BHT, 20,000 I.U. of vitamin E per ton or 1% lecithin to broiler diets in the presence of 5% fish oil failed to prevent a reduction of pigmentation. Present evidence indicates that fats and oils may differ in the effect on pigmentation, and the effect the various oils and fats have on pigmentation should be known before these are added to broiler diets.

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flock, the pigmentation of poultry was no problem in that plenty of green forage, which contained xanthophyll, was available. But with modern poultry nutrition, the feeding of poultry is considerably more complicated.

"The primary feedstuffs containing xanthophyll used in the manufacturing of poultry feed today are yellow corn, dehydrated alfalfa meal, corn gluten meal and certain commercial 'pigmenters.' These feedstuffs may vary in xanthophyll content as a result of storage conditions, season in which harvested and methods of processing.

"Yellow corn is probably the most consistent in xanthophyll content, which may vary from 4 to 8 mgs. per pound. Xanthophyll from yellow corn is more efficient in pigmenting poultry than xanthophyll from dehydrated alfalfa meal. The reason for this is not understood completely except for the fact that it might be more stable.

"Alfalfa meal usually is an excellent source of xanthophyll; however, the xanthophyll content is influenced by several factors. The xanthophyll content of dehydrated alfalfa meal increases with protein content and the 20% protein dehydrated alfalfa meal usually contains a very high xanthophyll content.

"A big objection to the use of alfalfa meal in broiler rations in recent years has been the low energy and high fiber content. It has been demonstrated that the energy problem may be overcome by removing a portion of the grain and soybean oil meal from the ration and replacing these ingredients with alfalfa meal and fat. The energy and protein content may be kept constant in this manner and at the same time obtain adequate pigmentation.

"The xanthophyll content of corn gluten meal increases with the protein content, and prime, 60% protein corn gluten meal is equal in pigmenting value to 20% protein dehydrated alfalfa meal. The corn gluten meal is relatively high in energy and also is a good source of protein. Unfortunately, the supply of corn gluten meal is seldom adequate to meet market demands.

"The proper and discriminatory use of alfalfa meal, yellow corn and corn gluten meal in conjunction with fat, antioxidants and finisher rations should enable the feed manufacturer to supply the producer with a broiler diet that will produce a broiler with 'buyer appeal'."

Iowa State Poultry Disease Book Revised

AMES, IOWA—The latest research findings in poultry disease prevention, control and cure are brought together in the new, 4th edition of "Diseases of Poultry," published by the Iowa State University Press at Ames.

Under the editorial leadership of Dr. H. E. Biester and Dr. L. H. Schwarte, both of Iowa State, 33 research scientists have pooled their writings, covering all aspects of the field. The result is a completely revised and greatly expanded edition of the book.

Seven outstanding researchers in the poultry field have been added to the list of authors of the new edition, and nearly half of the book's material appears for the first time in this volume. Among the major revisions are chapters on infectious coryza and chronic respiratory disease, ornithosis, paratyphoid and paracolon infections, equine encephalomyelitis in birds, infectious, synovitis, virbionic hepatitis, and a section on studies on the avian leukosis agent by electron micrography.

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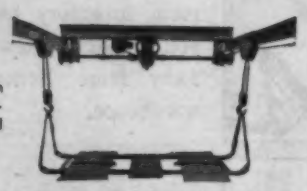
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In small pellets or large cubes — for feed in dairy barns, feedlots or range — a little bit of Sohio Feed Urea goes a long way.

You'll cut formulation costs by replacing high-priced protein meals with Sohio Urea's 262% protein equivalent (42%N). This extra protein "power" gives you greater flexibility in selecting other money-saving ingredients.

Important, too, you can't beat Sohio's micro-prilled feed urea for trouble-free handling and mixing. It's non-caking, always free-flowing. The micro-prills are sized and shaped to blend properly with other ingredients . . . distribute uniformly in your feeds — either pellets or meal.

The "Man from Sohio" will show you how Sohio Feed Urea can cut your formulation costs. He'll explain Sohio's rail or truck delivery, or plant pickup at Lima . . . and the additional savings and convenience of handling Sohio Feed Urea in bulk.

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16-59

BILLBOARD—Shown is the poster which will appear on 900 billboards in 18 states during October. The poster is part of a 12 month animal health promotion series inaugurated earlier this year by Chas. Pfizer & Co., Inc.

Pfizer to Sponsor 'EGGtober' Billboards

NEW YORK—Americans who motor in states east of the Rockies this fall will see this brief billboard message: "It's EGGtober . . . get more eggs with Terramycin." The special poster will be the high point of a 12 month animal health promotion series inaugurated earlier this year by Chas. Pfizer & Co., Inc., according to company officials.

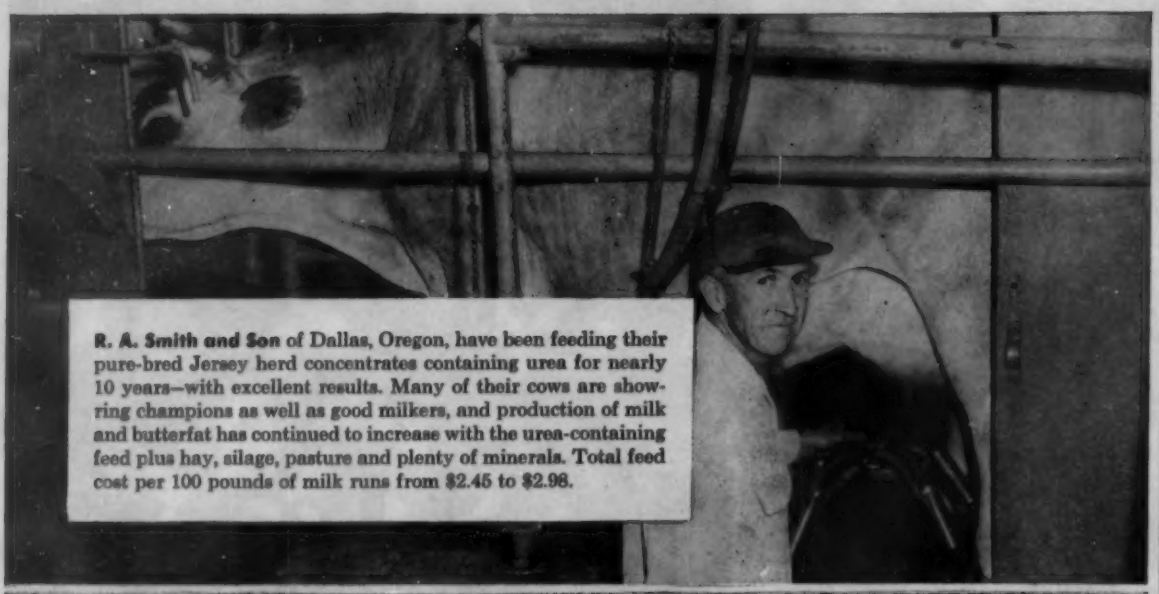
Travelers will recognize the billboards by a huge animated "Happy Egg," a blow-up of the egg caricature that will be displayed in chain food stores as a nationwide symbol of EGGtober. The egg caricature has his own message: "Eat More Eggs—high in protein . . . low in calories."

The agricultural division of Pfizer says the posters will appear on 900 billboards in 18 states during October.

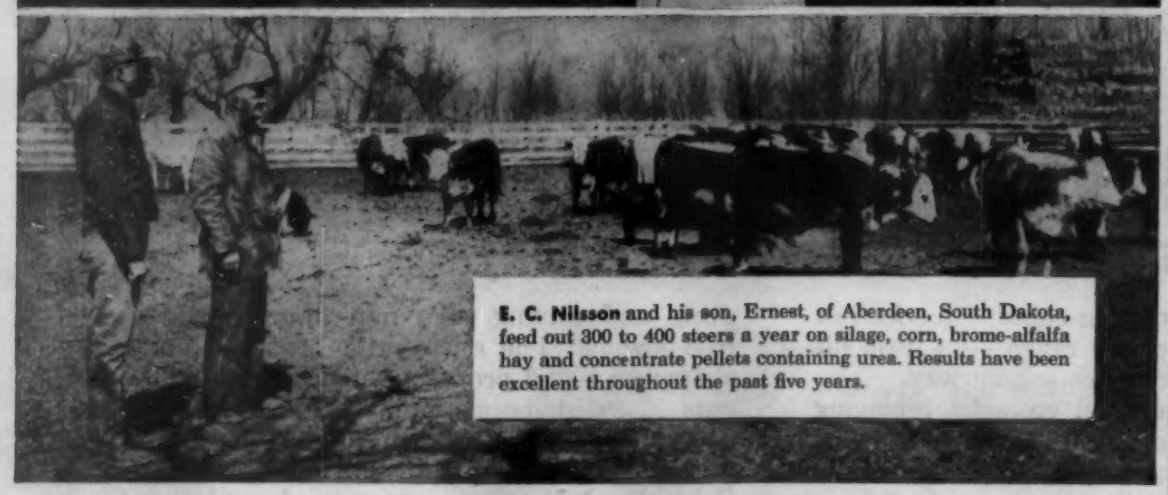
EGGtober, called "America's Extra Egg Month," will receive special consumer-level emphasis in supermarkets, in conjunction with the outdoor campaign directed at poultrymen. Some 5,000 retail food managers are expected to use window streamers of the "Happy Egg" symbol and indoor EGGtober displays to help sell eggs.

"In 1958, 8,500 feed dealers participated in the EGGtober promotion," Pfizer said. "This year's program, greatly expanded at the farm and consumer levels, is expected to attract still greater response from feed manufacturers and dealers handling Terramycin-fortified laying feeds."

Feeds containing urea pay off for these long-time users



R. A. Smith and Son of Dallas, Oregon, have been feeding their pure-bred Jersey herd concentrates containing urea for nearly 10 years—with excellent results. Many of their cows are showring champions as well as good milkers, and production of milk and butterfat has continued to increase with the urea-containing feed plus hay, silage, pasture and plenty of minerals. Total feed cost per 100 pounds of milk runs from $2.45 to $2.98.



E. C. Nilsson and his son, Ernest, of Aberdeen, South Dakota, feed out 300 to 400 steers a year on silage, corn, brome-alfalfa hay and concentrate pellets containing urea. Results have been excellent throughout the past five years.

It pays to use **PROCADIAN® UREA** *in your feeds*

Thousands of farmers know your high-quality feeds containing PROCADIAN Urea Feed Mixture are excellent for meat and milk production at a profit. This pure, easy-mixing source of protein is so concentrated that you have plenty of room in the bag to supply all the energy, minerals, vitamins and other essentials of a balanced supplement for cattle or sheep. This helps the animals to get top feed value out of their entire ration. It pays to use PROCADIAN Urea in all your ruminant feeds. Order PROCADIAN Urea today!

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Sales offices in leading farm areas

Allied Chemical

Salsbury Schedules Poultry Short Courses

CHARLES CITY, IOWA—The schedule of poultry short courses to be held by Dr. Salsbury's Laboratories the rest of this year was announced recently.

Four-day courses covering poultry disease recognition, prevention and control are scheduled Sept. 21-25, Oct. 12-16, Oct. 19-23, Nov. 9-13 and Nov. 16-20.

A recent count showed that of the courses already held in 1959 there have been 59 students from Canada; 6 from Mexico; 1 from Bangkok, Thailand; 2 from Beirut, Lebanon, and 1 from Israel. The foreign students were among 456 dealers, flock servicemen and growers who attended during the year.

Bonnett Feed Manager Is Touring Russia

BUSHNELL, ILL.—Among a group of agricultural men touring the Soviet Union and European countries is John Bonnett, general manager of Bonnett Feed & Grain Co., Bushnell. The tour, arranged in conjunction with President Eisenhower's People to People Campaign, is designed to implement the U.S. State Department's Cultural Visitation Exchange Program.

The group is observing farming methods behind the Iron Curtain. The tour also includes visits to England, Holland, Sweden, Czechoslovakia and East and West Germany.

John Hodapp is acting as manager at the Bonnett Feed & Grain Co. during Mr. Bonnett's absence.

Expanding at Yakima

YAKIMA, WASH.—Construction has been started by the Washington Farmers Co-op Assn. to expand its grain handling and storage facilities in the Yakima Valley.

The $200,000 expansion program will provide for more than 272,000 bu. of additional grain storage at the co-op's mill in Granger and expand grain receiving and drying facilities there.

A new grain receiving station also is being constructed near Harrah.

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Screen analysis: All through 14 mesh; 80% on 200 mesh, plus or minus 5%.

CORONET GRANULAR DIKAL

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Screen analysis: All through 20 mesh; 80% to 90% on 200 mesh.

Better Service . . . by rail and extensive private truck facilities . . . provide Coronet customers dependable deliveries around the clock.

Whether you manufacture feed in California, Colorado or Carolina, you'll be pleased with the better delivery service you receive when you use Coronet phosphorus feed supplements.

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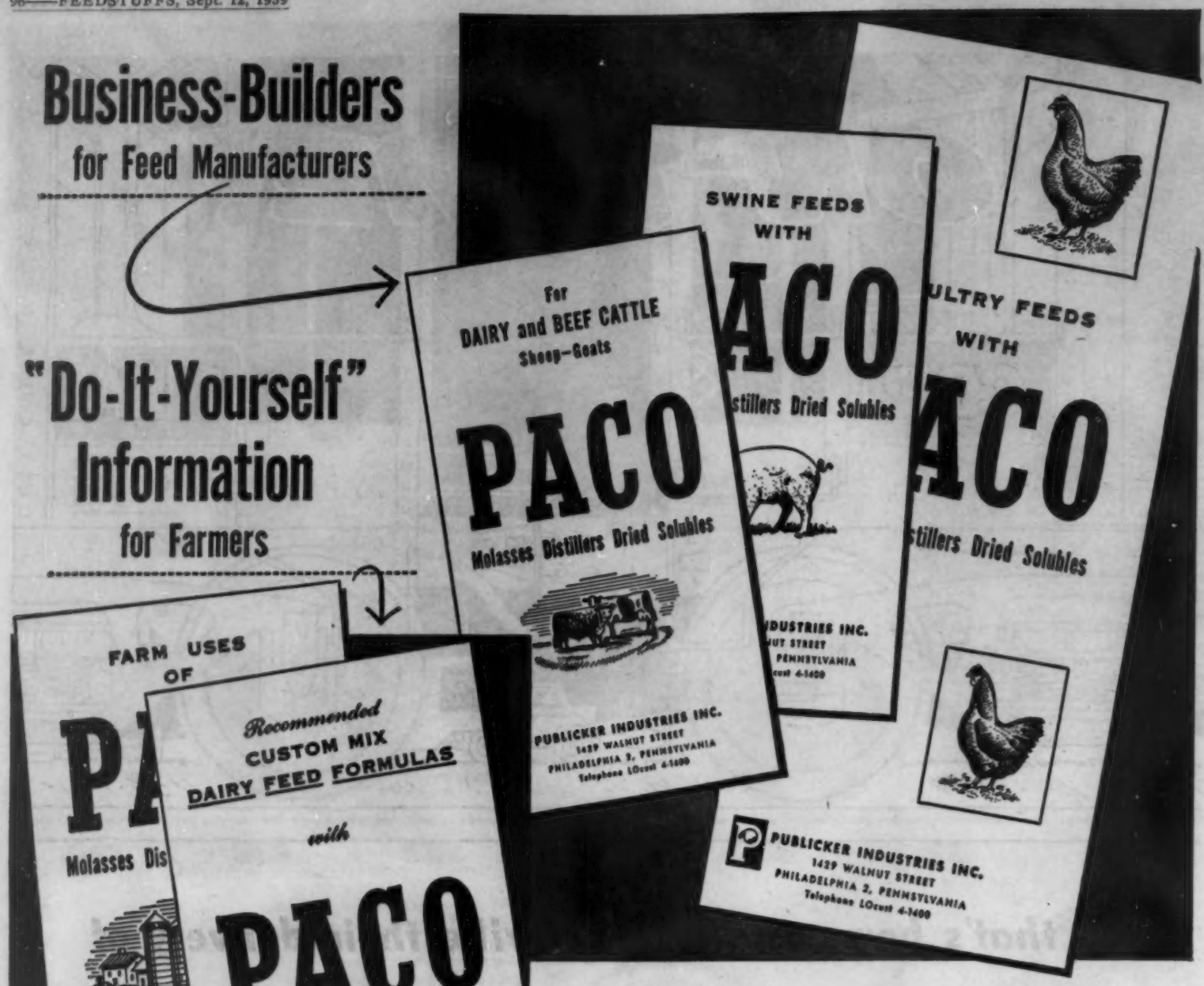

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The complete line of Paco folders is now available to all Feed Manufacturers and Dealers, for their own information, along with other literature to distribute to their customers. If you are not acquainted with PACO and its many advantages as a fortifier and "freshener" for all types of feeds, we will be pleased to send by return mail the data you check on coupon below.

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PUBLICKER INDUSTRIES INC.
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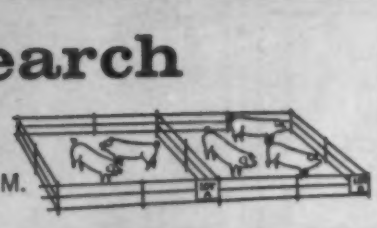
BY SPENCER H. MORRISON, PH.D., D. V. M.

Influence of the Method of Preparation on the Feeding Value of Alfalfa Hay

● J. H. Meyer, W. C. Weir, J. E. Dobie and J. H. Hull, University of California; Journal of Animal Science, Vol. 18, No. 3, August, 1959, pp. 976-982.

ABSTRACT

This experiment was undertaken to study the hypothesis that fine grinding of hay was a major factor in increased intake of pellets, and that the pelleting process merely played a role by making a finely ground hay more palatable.

Forty-eight uniform sheep were assigned to eight lots of six lambs each, and individually fed twice daily, ad lib. Since it took approximately two weeks to adjust all of the lambs to the feed used, especially the finely ground hay, initial weights were not taken until the animals had been eating the experimental rations for two weeks.

The hay taken was harvested from a very uniform cutting of alfalfa and prepared as follows: One half of the hay was ground through a one-sixteenth-inch screen and the other half was coarse chopped with a 1-inch screen. The treatments were as follows for each lot of hay:

(1) Fed as finely ground or chopped hay.

(2) Fed as a three-eighths inch pellet for the finely chopped hay, and as a four-inch wafer for the coarsely chopped hay.

(3) Fed as ground or chopped hay mixed with water.

(4) Fed as the reground pellet or wafer mixed with water.

Water was mixed with the water-treated hays just before feeding, but not beyond the absorptive capacity of the roughage. The pelleted, finely ground hay was reground through a one-sixteenth inch screen, while the reground wafer resulted from grinding the wafers through a one-inch screen.

The various methods of preparing the alfalfa hay used for feeding did not influence the composition to any great extent, although densities were greatly influenced according to method of preparation.

The gains and the feed consumption of the lambs fed the finely ground hays were significantly greater than for those fed the chopped hays. Pelleting or adding water to the finely ground hay significantly increased feed consumption and daily gain.

Although gains and feed consumption were slightly lower for the lot receiving the ground hay plus water than for the lot fed pelleted hay, the differences were not significantly different. Regrinding the pellets and mixing the hay with water did not increase the gains as compared with those lambs fed finely ground hay plus water.

The response of the lambs fed the wafers and the reground wafer plus water were equal, but those fed the chopped hay plus water were appreciably poorer.

When weight gains were adjusted to equal feed intakes it was shown that no significant differences existed between any of the treatments.

COMMENT

Pellets are definitely here to stay. And we need to know how they produce increased gains. Although increased feed consumption is practically always noted as a contributing factor in producing increased gains and/or better feed conversions, the basic reason is not well understood.

The California group reasons that this experiment shows that fine grinding may be the major factor for increased feed consumption of pellets and that pelleting serves to put the dusty feed in a palatable form. The evidence is: (1) The sheep fed the finely ground material had the largest feed intake, (2) adding water to the finely ground material resulted in increased feed consumption practically as great as that from pelleting the material and (3) feed consumption did not increase as markedly when coarse material was pelleted as when the fine material was pelleted.

This experiment also helps to explain some other results which have been at variance with some of the good results reported for pelleting. For example, both Meyer et al. (1959) and Esplin et al. (1957) reported that animals fed pelleted hay and chopped hay made equal gains when fed on an equalized feed intake basis, and that differences previously reported for pelleted hay were due to increased feed consumption. The current California work shows the same to be true when the results are examined by covariance analysis based on equal feed consumption.

Another interesting aspect of this experiment is that wetting the hay increased feed consumption even though there was some souring and spoiling of the hay, which undoubtedly influenced consumption somewhat. Nevertheless, pelleting the fine hay resulted in a feed intake increase from 2.03 to 3.59 lb. per day. Adding water to the ground hay increased the intake to 3.17 lb. per day.

It is interesting to speculate whether or not it might be more practical to experiment with methods to add water to the feed rather than to resort to pelleting. Certainly the basic economics look superficially more attractive! It would seem that we need more research on large animals on wetting of the feed ration. Is it possible that other benefits may become apparent in view of the work by Washington and Oregon with barley diets for poultry, etc.?

◆

Timely and Worth Noting

It was reported in this column (Feedstuffs, Aug. 29, 1959) that the British Columbia workers have developed a new assay method for determining the estrogenic activity in forages. Now comes another report by the Western Regional Laboratory, Albany, Cal., to the effect that it also has designed and developed a similar method to determine the estrogenic activity in fresh and dried forages. And the workers there report on improved extraction procedures to be followed. (E. M. Bickoff, A. N. Booth, A. L. Livingston, A. P. Hendrickson and R. L. Lyman, Determination of Estrogenic Activity in Fresh and Dried Forage, Journal of Animal Science, Vol. 18, No. 3, pp. 1000-1009). Take your pick!

Michigan Feed, Grain Conference Set for Oct. 15-16

EAST LANSING, MICH. — "Planning to Serve Agriculture of Tomorrow" is the theme of the Michigan Feed & Grain Dealers Assn. conference to be conducted Oct. 15-16 at Kellogg Center on the campus of Michigan State University.

Subjects of talks and authorities who will give them are: "Trends in Animal Agriculture," J. D. Sykes, vice president, Ralston Purina Co.; "The Story of 370 Grain Banks in Indiana," Dr. W. S. Farris, Purdue University; "Selling and Merchandising," R. F. Jennings, General Motors Corp. truck division.

"Dairy Calf Feeding," Dr. C. A. Lassiter, Michigan State; "What Do I Expect of My Feed Dealer?," Stanley Oswalt, poultryman and dairyman, Vicksburg, Mich.; "Tomorrow's Feed Additives," Dr. Warren McMillan, A. E. Staley Manufacturing Co., and "The Effects of the St. Lawrence Seaway on Grain Movement in Michigan," Capt. Joseph V. Cook, Muskegon Port Authority.

In addition, the Michigan group will be addressed by Bob McConkey, Durand Milling Co., association president; Madison Clement, president, Grain & Feed Dealers National Assn., and Robert Liebenow, president, Chicago Board of Trade.

FIRM INCORPORATES

SPANGLE, WASH. — The Centennial Grain warehouse here has been purchased by a group of businessmen and farmers who have incorporated under the name of Farmers Grain, Inc. M. G. Mangis, Centennial manager, will continue in this capacity for the new firm.

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Makes grain drying easier than ever! No batches; just simple, continuous drying. An M-C Grain Dryer at your elevator will do a better job of quality drying. Here's a grain dryer that really improves grain quality with no heat damage—no kernel checks or cracks. These are some of the features only available in the M-C Grain Dryer.

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FEEDSTUFFS reprints

The following reprints of articles which have appeared in Feedstuffs may be obtained on order from Feedstuffs' Reader Service Department:

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19. **Dairy Calf Feeding Research**—by Dr. Frank M. Crane, Land O'Lakes Creameries 20c
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25. **Protein and Energy Requirements of Chickens in Egg Production**—by Dr. Paul E. Waibel, University of Minnesota 20c
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WINNERS—Three sales representatives were named winners of the recently completed sales contest conducted by Geerlings' Feed Mills, Waterloo, Iowa. The winners (left to right) are: Cecil Bowle, West Liberty, Iowa, first place; Ralph Hatcher, Anamosa, Iowa, third place, and John Riead, Monmouth, Ill., second place.

Say Cow Pools Won't Become Important In Minnesota Scene

ST. PAUL—It's the opinion of a group of University of Minnesota extension specialists, economists and other researchers that the cow pool probably won't become very important in Minnesota.

Reasons for these conclusions include low prices for Minnesota milk, increased cost of forages for cow pools and management problems. And another is that many dairy farmers might have trouble finding as good a use as they now have for their land, buildings and working time if they send their cows to a pool.

University of Minnesota researchers studying the few midwest cow pools in operation say that the importance of each good and bad point would depend primarily on the particular type of pool arrangement a dairyman may be thinking of getting into. So, how can a farmer decide whether a pool would be a good idea?

The dairy farmer must remember that when he joins a pool he becomes an investor. Yet, say the researchers, Minnesota dairy farmers are short on investment capital but long on labor. If they invest in cows and put their animals in a pool, they may have little or nothing left to invest in equipment and other livestock for the home farm. So, in many cases they might be best off, it is suggested, by actually selling the cows to the pool and getting capital to invest in working equipment. This, of course, would be simply shifting out of dairying entirely.

Here's a new wrinkle that has come out of cow pool discussions: University of Minnesota agricultural specialists suggest that it might be possible for, say, a dozen farmers in an area, each with maybe 30-40 cows, to pool their cattle and forages and divide up their working time so each has a five or six-day week. But farmers doing this would have to get used to the idea of adjusting their desires to those of someone else and losing some independence.

The university men conclude that if cow pools are efficient enough to compete with farmers who keep their own herds, they will show up. And if they did compete, they would be no panacea for the small farmer—unless he has a good deal of capital and can find other profitable uses for his land and labor.

PLANT ADDITIONS

ANNANDALE, MINN.—The Farmers Cooperative Elevator here is adding 19 steel bins for bulk feeds, according to Mr. Lucht, manager. The bins will contain complete feeds, concentrates, soybean meal, meat scraps and other ingredients in bulk. The plant is also installing three mixers, a hammermill, a roller mill, a 5,000 gal. liquid molasses tank and a corn sheller.

Colonial Expands Southern Sales

PLEASANT HILL, MO.—M. R. Irwin, president, Colonial Poultry Farms, Inc., Pleasant Hill, has announced the expansion of its Colonial True-Line direct sales department and the appointment of W. B. (Bill) Rice to the post of sales promotion manager for southern states, with offices in the Colonial plant at Cullman, Ala.

Mr. Rice, 41, is vice president and treasurer and has been with the Colonial organization 20 years, working in Missouri and Iowa hatcheries and managing plants in Kansas, Ohio and Texas. He is also vice president and treasurer of NestEggs, Inc., a quality egg company which is presently constructing a 5,000-bird, air-conditioned, windowless house northeast of Sweetwater, Texas.

Succeeding Mr. Rice as manager of the Sweetwater plant is James B. (Jim) Kelly, who has been its sales representative this past season. Mr. Kelly is a graduate of Texas A&M and, for the last three years, has been manager of the Purina dealership in Snyder, Texas.

INCORPORATED

YUBA CITY, CAL.—Dan Gilman and Charley Low have incorporated their Yuba Almond Hull Dryer firm, Yuba City, at a capitalization of $75,000. The firm processes almond hulls used as feed ingredients.

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New stepped-up potencies, low mixing costs, more uniform distribution . . . to meet today's need for greater feed efficiency! 3 package sizes to meet the exact needs of your equipment for easy, accurate mixing.

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"Oh, I didn't do so much," Joe said

Lorne F. Van Stone

RESIGNS—Lorne F. Van Stone recently resigned as president and general manager of Uncle Johnny Mills, Houston, to become executive vice president and general manager of the United Salt Corp. of Houston, according to an announcement by Lloyd P. Webre, chairman of the board of United Salt (see Aug. 22 Feedstuffs, page 8). Mr. Van Stone had been associated with Uncle Johnny Mills since its organization.

Briefs on Research Feature of Nov. 16-17 Washington Conference

YAKIMA, WASH.—Ten-minute research briefs concerning animal and poultry nutrition and production will be a feature of the 12th annual Washington State College Animal Industry Conference Nov. 16-17 at Yakima Junior College here.

The briefs will be presented by members of the college staff and will cover these research subjects: "The Effect of 3,3'diallylhexastrol (stilbestrol derivative) on Beef Cattle"; "How Pelleted Grain Affects Milk Production and Composition"; "Beef Production with Dairy Type Steers"; "The Effects of Tranquilizers on Beef Cattle Performance"; "Effects of Different Periods of Light During the Growing and Development Period on Subsequent Egg Production of Pullets"; "Restricted Feeding of Growing Pullets Under Restricted Light"; "Present Status of Coccidiostats for Poultry"; "Enzymes for Day-Old to Year of Age"; "Some Studies with Tranquilizers for Birds," and "Effect of Dietary Fat on Turkey Breeders."

Washington and visiting researchers will complete the program with discussions of ruminant feeding, swine feeding, white muscle disease in sheep and cattle, enzymes, mineral feeding and inhibitors in ingredients for poultry.

Arbie Patents New Pelleted Mineral

MARSHALLTOWN, IOWA — A sweet and soft cattle mineral in pelleted form has been patented by Arbie Mineral Feed Co., Inc., Marshalltown. It is claimed that the new pelleted mineral eliminates loss of the feed by wind and sifting.

According to Arbie sales information, the pelleted cattle mineral contains high levels of phosphorus from dicalcium phosphate, balanced levels of trace elements, stabilized vitamins A and D, live rumen bacteria and active live yeast.

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*Based on extensive college and commercial trials.

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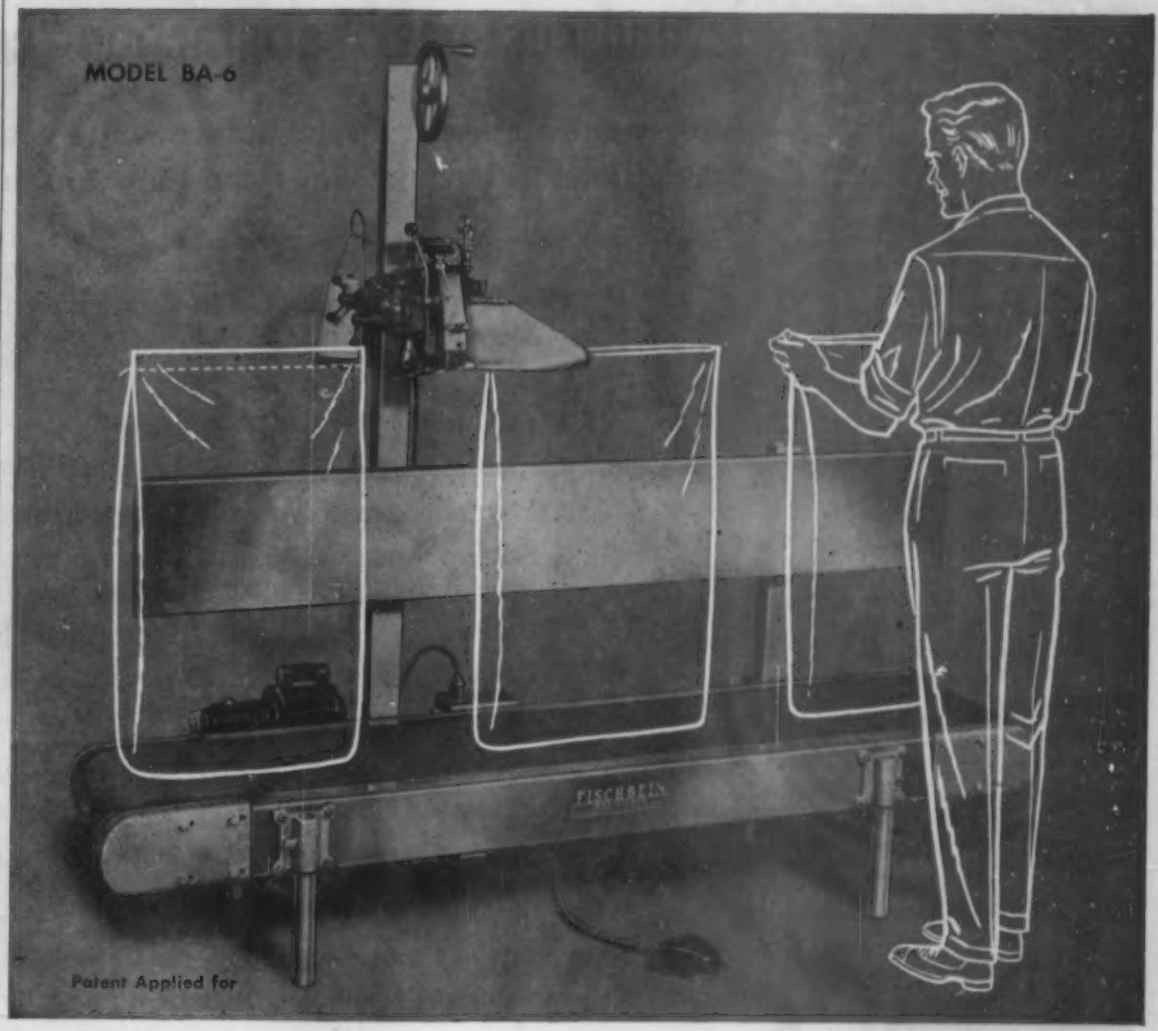

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JOE BROOKS

BY AL P. NELSON

A Good Man to Know: The Banker

A tall, middle aged man came into the Brooks Feed Mill and made his way toward Joe's office. He was well dressed, wore glasses and had a businesslike air. In his right hand he carried a small briefcase.

As the man opened the door to Joe's office, Joe looked up and a smile broke over his face. "Hello, Greg," he said, recognizing Greg Hazen, farm representative of a local bank. "Glad to see you. Sit down."

The man smiled and took a seat, then took off his glasses and began wiping them. "Have you a little time, Joe?" he asked.

"Sure," grinned Joe cordially. "I always got time for bankers. I want to cultivate them. Someday I may want a loan."

Mr. Hazen chuckled rather dryly. "Yes, bankers are popular when it comes to making loans. But then why shouldn't they be? That's their business."

"I wish more banks felt like this," Joe said. "My collection problems have been cut in half since the First National put you on as a farm representative. I am no longer a banker for the farmer. The finance business goes where it should—to the banks."

Mr. Hazen chuckled again. "Well, we are an agricultural bank, so to speak. Our welfare depends on the farmers and their prosperity. It was time we contacted them regularly, and sought out their needs right on the farm. If it hadn't been for you, Joe, I don't think our bank would have a representative like me calling on farmers. I've got a good job out of it, and at board of directors' meetings they all look to me for a report on farm conditions. Makes me feel good."

"Well, you are treating farmers fairly," Joe said. "I hear many good reports about you."

Credit Information

Mr. Hazen dug out some cards from his briefcase. "I can always depend on you to fill me in on some farmers where my credit file is not quite complete, Joe. I like to know a man's paying habits over a two-year period, and how he's lived up to commitments. I like to check your customer record cards on a man to see if they agree with ours."

Joe smiled. "And I gain, too, Greg. Sometimes I have information you haven't got, and vice versa. I wish I had worked on your president, Henry Harrison, sooner on this feed and fertilizer loan business."

"Well, Joe, I suppose it could have been done earlier. But you know how people are—bankers, too," Mr. Hazen answered. "We put off things that don't seem too pressing. We've been financing farm implements, farm appliances, farms, etc., for years, and we shied away from consumable items such as feed and fertilizer. Now, reputable banks are studying this matter. If dealers were as vigorous and persistent as you have been in contacting your banker, more bankers would be helping farmers finance feed and fertilizer purchases today."

"Oh, I didn't do so much," Joe said modestly.

"You certainly did. You cornered our president at Kiwanis, Chamber of Commerce and other occasions whenever you could and started educating him on farmers' feed and fertilizer needs. You sent him your monthly mimeographed bulletin for years. And I believe you put in several of those case histories on feeding projects just for his consumption now and then."

"Could be," smiled Joe.

"And then to top it off," Mr. Hazen said, "you made up a 12-page mimeographed booklet for him on the need for financing feed and fertilizer purchases, with lots of statistics on county agriculture and how many dollars it produced annually. Then, too, you had a number of case histories from your records showing how farmers benefited from following a balanced feed program. And from fertilizing according to soil recommendations. That made President Harrison

You can sell best

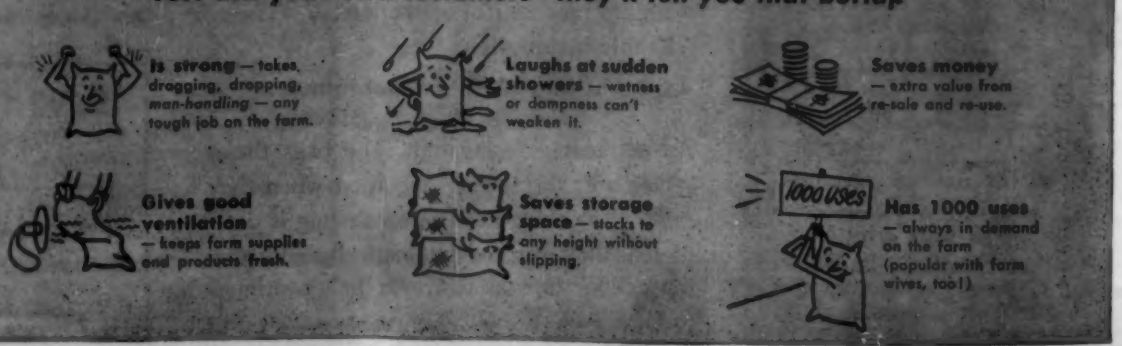
...and customer satisfaction "comes in Burlap!"

Have you ever added up the inducements you can offer when you sell sacked feed in burlap? They can help you in selling. Here they are:

1. *A discount* on every ton of feed, when the mill provides a return-bag program.
2. *Simplified inventory* for the customer.
3. *Identification* for medicated feeds.
4. *Non-separation* of formula-ingredients.
5. *Your prices* are competitive with returnable burlap bags.
6. *Service*...you can give small customers as good delivery service as large customers (and on the same route).
7. *Bulk customers* can be served with bag-to-bulk trucks.
8. *Quantities* can be bought *as needed.*
9. Feed in burlap bags is *sanitary and free from contamination.*
10. *Accurate weights* are assured in a burlap bag.
11. *Fifty-pound* as well as 100-lb. bags can be offered.
12. Farmers have many uses for empty bags...only burlap serves them so well!

Quite a few selling-points, don't you agree? Next time you're selling a new customer, remember there's a lot to be said for burlap bags!

Just ask your own customers—they'll tell you that burlap


Is strong — takes dragging, dropping, man-handling — any tough job on the farm.
Laughs at sudden showers — wetness or dampness can't weaken it.
Saves money — extra value from re-sale and re-use.
Gives good ventilation — keeps farm supplies and products fresh.
Saves storage space — stacks to any height without slipping.
1000 USES
Has 1000 uses — always in demand on the farm (popular with farm wives, too!)

Whitmoyer

KEMITRACIN

the purified ANTIBIOTIC complex—that does your feed antibiotic job better!

Send for complete scientific data.

WHITMOYER LABORATORIES, Inc.
MYERSTOWN, PENNA.

hold several board meetings to consider your idea, Joe. And finally I was hired."

Financing Best for Banks

"Well, you are a good man for the job, Greg. A long time ago I figured that it would be best for me, too, to have banks finance feed and fertilizer loans. I set out to meet my bankers, confer with them, educate them about agriculture. I figured a farmer had to have credit, but that I couldn't afford to extend it."

Greg Hazen crossed one leg over another, the record cards in his right hand. "You certainly can't, Joe. The bigger your business grows the more money you handle. The bigger the farmers are, the more feed and supplies they require, much of it financed. You would soon run out of capital if you tried to finance every farmer who asked for it."

"Right," Joe agreed. "And the best part of this deal is that the farmer himself is learning that it is better to get credit through a bank loan than to ask a feed dealer for it. Getting credit is now on a business basis with specific terms. I'm not on a 100% cash basis, Greg, but since you fellows are financing worthy customers of mine, I get a quicker turnover on a lot of my capital which is just the same as increasing my cash volume."

Greg nodded. "My superiors won't admit it, but our farm business has increased a great deal since they put a man in the field visiting farmers. You know, if you ask for good business, you'll get more of it than if you just sit at your desk and wait for business to come to you."

Joe smiled. "That's the same way it is in the feed business. That's why we have a daily route man who calls regularly on all farmers in our trade area. We pick up an awful lot of sales outside the store that we just wouldn't get otherwise."

"Funny how trends go, Joe," Mr. Hazen said. "President Harrison asked me to give a little talk at the Tri-County Bankers meeting next month on how we handle farm business, how we approach and find out farmers' needs. Got time to listen to a few high points I've jotted down? I'd like your appraisal of what I have to say."

"Sure," Joe said. "Here's a chance for me to learn, too."

"Well, one thing I'm going to stress at this meeting, Joe," said Mr. Hazen, "is to tell the bankers they should take the initiative in getting to know their feed and fertilizer dealers in their areas. I'm saying that the bankers and these dealers can work together to help the farmer obtain financing for his purchases, including feed and fertilizer purchases."

A broad smile broke over Joe's face. "Wonderful! Wonderful! Tell me more!"

STORE OPENED

YORK, S.C.—The Farmers Service Center has opened at York, at the Clover-Kings Mountain Highway.

Value of Soybean Hulls as Feed Ingredient Studied

WOOSTER, OHIO—Results of research at the Ohio Agricultural Experiment Station to determine the value of soybean hulls as a feed ingredient in ruminant feeds were recently published in Ohio Farm and Home Research.

Contents of the report by Dr. Ronald R. Johnson, Dr. A. L. Moxon, H. W. Scott and O. G. Bentley follow:

Recent changes in the soybean milling industry have made large quantities of soybean hulls available as a by-product. When 44% soybean oil meal is produced, the hulls are left in the meal. However, the poultry industry now prefers 50% protein soybean oil meal for many of its formula feeds, especially high energy broiler feeds. This necessitates leaving the hulls out of the meal. Thus, soybean processors have been interested in the potential feed value of the excess hulls. Research has been underway at the Ohio Agricultural Experiment Station to determine the value of soybean hulls as a feed ingredient in ruminant feeds.

Contain Cellulose

Soybean hulls contain around 43% cellulose which is considerably higher than most roughages consumed by cattle and sheep. For example, alfalfa hay contains 20-30% cellulose while grass hays may contain as high as 35%. The digestibility of hay cellulose varies considerably depending on the type of hay, the stage of maturity of the plant at harvest, and how well the hay was preserved in the harvesting process. Laboratory experiments have shown that the cellulose in soybean hulls is much more digestible than hay cellulose.

For many years, digestibility stu-

what serves best!

THE
BURLAP COUNCIL
122 East 42nd Street
New York 17, N. Y.

GIVE HIM ADVICE
HE'LL APPRECIATE
Remind him to order
Morton T-M Salt. See page 107.

CALL *Babe* or *Bob Stuart* for
★ MILL FEEDS ★ LINSEED MEAL ★ SOYMEAL
★ ALFALFA MEAL ★ SCREENINGS
RELIANCE FEED CO. FOR 30 YEARS Phone FE 2-3918 216 Phoenix Bldg. Minneapolis, Minn.

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Processors of DRIED FISH SOLUBLE PRODUCTS
A "MUST" IN EVERY SWINE OR POULTRY RATION
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Dehydrated ALFALFA MEAL High Carotene
From the Fertile Red River Valley of Minnesota
Write - Phone - Wire
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dies have been carried out by feeding known amounts of a feed to an animal and analyzing the urine and feces to determine how much of a given nutrient the animal did not use. Recently, workers at this station have developed a technique for studying cellulose digestibility by growing rumen bacteria in the laboratory in an "artificial rumen." Rumen bacteria are taken from a steer and allowed to grow in a medium containing the ground roughage being tested and, after a period of 48 hours, the amount of cellulose digested is determined by chemical analysis. Using this technique it was found that the cellulose in alfalfa hays was 50-58% digestible while the cellulose from grass hays was 45-65% digestible. These results agreed well with values obtained using the conventional digestion trial with sheep. However, when soybean hulls were tested by the laboratory method, it was found that the cellulose was 95% digestible. Yet, when it was tested by the animal digestion trial method, a value of 54-59% digestibility was obtained. In these trials, soybean hulls or soybean flakes (soybean hulls flaked by rolling) were fed as the entire ration.

CONTRACT — Shown signing their new sales agency contract for Philips vitamin D products in the U.S. are Arie Vernes, president of Philips Roxane, Inc.; Stephen R. Sills, vice president of Philips Roxane, Inc., and Charles Bowman, president of Charles Bowman & Co. and Bowman Feed Products, Inc. N. V. PhilipsRoxane in the Netherlands manufactures and sells vitamin D products in various forms ranging from the pure crystalline substance to the dry mineral stable powders. The PhilipsRoxane vitamin products were introduced to the food, feed and pharmaceutical trade 10 years ago by Charles Bowman & Co.

Had Laxative Effect

During these trials the feces from the animals fed soybean hulls were quite loose, suggesting that the soybean hulls had some laxative effect when fed as the entire ration to sheep. A possible explanation for the lower digestibility value in the animal trials as compared to the laboratory trials was simply that the soybean hulls were passing through the rumen too fast to be completely digested. Studies on the feces showed that much of the cellulose in the feces was still digestible when placed in the artificial rumen for 48 hours.

Further proof of this explanation was obtained when soybean hulls were placed in a dacron bag and the bags were inserted into the rumen of a steer through a permanent fistula. The bags were removed after 30 hours in the rumen and it was found that 96% of the cellulose in the soybean hulls had been digested.

It is obvious then that the cellulose in soybean hulls and flakes is almost completely digestible if it can be held in the rumen long enough for the bacteria to complete the digestion. Experiments are now underway to test various ways of feeding soybean hulls alone and in combination with other roughages to increase the efficiency of digestion of cellulose in the hulls.

Are Palatable

It is interesting to note that soybean hulls contain 10-11% protein which is 85% digestible. Also, the fact that they are quite palatable would add interest to their use as a feed ingredient for ruminants.

Soybean hulls should be excellent as a replacement for screenings, oat hulls or other mill feeds in mixed feeds for ruminants. As hulls or flakes, they are quite bulky but they can be ground for use in either meal or pelleted feeds.

NEW SOURCE FOR UNIDENTIFIED GROWTH FACTORS!

Mazoferm® Proves Dependable Low Cost Source for UGF

A new, reliable source has been found for unidentified growth factors. Research and experiment by Corn Products Company prove that Mazoferm corn fermentation condensed solubles, derived from corn steepwater, is a potent source for chick growth factors and may be used to replace completely other sources for UGF such as fish solubles, dried whey, distiller's residues, etc.

Unlike some growth factors, Mazoferm is never in short supply. Because it is derived from corn, the supply is virtually inexhaustible, dependable from year to year and *low in cost*. Nutritionists know there are at least two chick growth factors: one in dried whey and one in fish solubles. Mazoferm is interchangeable in whey factor and has an appreciable level of fish factor activity.

Experimental stations and Corn Products Company tests have confirmed the favorable growth response of chicks to Mazoferm. Weight gains were higher for Mazoferm-fed chicks, averaging 5.2% over control lots. Feed efficiency was slightly higher.

Mazoferm's Advantages

Feed manufacturers will find Mazoferm has several unique features found in no other source of unidentified growth factors:

- Most important for a volume user: Mazoferm is a *dependable, low cost* source of high potency UGF.
- Mazoferm is a liquid, hence storage and handling costs are minimized.
- Mazoferm is never processed above 185°F; vital heat-sensitive factors remain intact and at full potency.
- Tests show that Mazoferm improves palatability and pellet hardness. Feeding experiments show chicks prefer Mazoferm 1½:1.
- Mazoferm is equally adaptable to starter mashes as well as regular feeds.

How Mazoferm Is Made

Before corn is processed into high purity starches, syrups and sugars, the kernels are steeped in water at pH 4.0 for forty hours at 125°F. All water soluble proteins, sugars and mineral salts are removed during this extraction and the extract is known as corn steepwater. Corn steepwater has proved an excellent growth medium for yeasts, molds and bacteria. Corn steepwater is widely used for the production of many specialized fermentation by-products.

The nutritive value of corn steepwater is further enhanced and amplified by fermentation. Finally, the fermented corn steepwater is condensed so that Mazoferm, the end product, is a 50-55% solids mixture.

CORN PRODUCTS SALES COMPANY

Technical References

1. Russo, J. M. and V. Heiman. "The Value of Corn Fermentation Condensed Solubles as a Growth Stimulant for Chickens." *Poultry Science*, 38:1, Jan. 1959.
2. Camp, A. A., H. T. Cartrite, B. L. Reid, J. H. Quisenberey, and J. R. Couch. "Corn Steepwater Solubles as a Source of Unknown Growth Factor(s) for Growing Chickens." *Poultry Science*, 36, 6, Nov. 1957.
3. Heimbuch, A. H., L. W. Aurand, and M. L. Speck. "Some Characteristics of a Growth Stimulant in Corn Steep Liquor for Lactobacillus Casei." *Journal of Bacteriology*, 72, 543-547 (1956).

Buy and Sell through WANT ADS —in— FEEDSTUFFS

MANAGER

(Continued from page 44)

dealers across the U.S. who are aggressive merchandisers are:

1. On-the-farm salesman (or serviceman). During the first year the Archer (Iowa) Cooperative Elevator had a full-time serviceman, he contributed $6,006 in total net income (after all expenses brought about by the addition of the field serviceman) for the feed, seed and fertilizer departments. This is an actual figure arrived at during a case history study of the Archer company during the Iowa State University Workshop. In addition, the serviceman contributed many other intangible results and is still doing so. Only 44% of all feed and farm supply dealers have on-the-farm salesmen.

2. Make a farm survey so that a more intelligent job of selling can be done and trends analyzed. (See the accompanying suggested survey form. This can be adapted to your own particular situation.)

3. One or more farmer meetings a year. Once or twice a year, set off a merchandising "firecracker," such as an open house, an off-season discount special event, a merchandise demonstration, a clinic with the aid of one of your suppliers or a special live exhibit. Several firms have unusual success with a two-week preholiday feed promotion by offering with each ton of feed a coupon good for a free turkey at a nearby supermarket. One firm does a lively business on special one-day events in which the customer gets his first job free when a new piece of equipment is installed (grinder, mixer, molasses mixer, etc.).

4. A definite sum in the budget for advertising. While some dealers have good results with newspapers and radio, don't overlook telephone selling, direct mail and the classified section.

The farm store that is spending more than 1% of its yearly gross income on advertising surprisingly is spending more than the average. The majority spend less than 1% and a number of surveys have shown that the figure is less than one half of 1%.

These figures should not be used as guides to follow because surveys have established one other startling fact: Farm stores spend far less on advertising than most other retail stores on main street. This is certainly not an impressive distinction. Department stores spend more than 2% of their annual gross volume; specialty shops, jewelry stores, men's and women's shops and furniture stores spend 3% or more on an average. Hardware and paint stores range somewhere between 1% and 1.5%.

Often a dealer will defend a policy of spending little or no money for advertising by claiming that the margins on feeds, seeds and fertilizer are too small to permit a larger expenditure. The fallacy of this thinking is that an unlimited advertising budget would not help make a profit for a dealer that does not maintain adequate margins. Advertising and sound pricing are two different topics and related only insofar as both should be part and parcel of a sound merchandising program.

5. Specific arrangements with your employees to instruct them in your business policies. Allow time for training employees and invite suppliers in to talk with them so that they know your lines fully. Employees generally don't learn how to do their jobs properly on their own, they must be instructed. The manager must set the goal and if the goal isn't high, the employee can't be expected to exceed even a low level of proficiency. Consider carefully an employee incentive plan for, next to a fair-minded employer, the worker responds next best to a stimulus such as incentive payments.

FOR Feeding OILS INGREDIENTS
Packing House By-Products
IVAN SCANLAN & CO.
5805 Lyndale Avenue So., MINNEAPOLIS 13, MINN.
TAYLOR 3-7253

More and More . . .
Feed Mills Are using
More and More
Stabilized ANIMAL FATS
and MEAT PROTEINS
Find Out Why . . . WRITE
NATIONAL RENDERERS ASSOCIATION
Organized in 1923
20 N. LA SALLE ST.
CHICAGO 2, ILL.
Phone FR 2-2299

900 BILLBOARDS

Over 900 billboards in top egg-producing areas are helping sell your EGGtober Feeds with Terramycin*.

Pfizer
Chas. Pfizer & Co., Inc., Brooklyn 6, N.Y.
Science for the world's well-being
*Terramycin Brand of Oxytetracycline

GOING INTO MOBILE MILLING?

Then your BEST BUY is Daffin !

HERE'S WHY . . . The Daffin Method of Mobile Milling sells more feed, makes more profit (for both the Daffin Feedmobile owner and his farm customers) and builds more good will than any other type of feed processing or bulk delivery service you can offer!

What's more, to top off its profit-making potential, the economy-engineered Daffin will return value to you many times over in quality construction, low-cost maintenance and in new labor-saving conveniences.

Satisfied owners will tell you: If you're going into a Farm Feed Service, go into Mobile Milling, and "DECIDE ON DAFFIN NOW". Sooner or later you'll wish you had!

IT PAYS TO INVEST IN THE BEST!
Write today for details on the complete
DAFFIN PLAN FOR PROFIT

Daffin MANUFACTURING COMPANY
Builders of the World-Famous Daffin Packaged Feed Plants, Pneumatic Conveying Systems, Pelleting Machines, Batch Mixers
SERVICE PARTS DEPOTS: Alabama-Birmingham-Montgomery • Arkansas-North Little Rock • Georgia-Perry • Illinois-Springfield • Indiana-Evansville-Indianapolis Iowa-Cedar Rapids-Sioux City • Kansas-North Kansas City • Kentucky-Shelbyville • Michigan-Detroit-Grand Rapids • Minnesota-Rochester • Nebraska-Omaha • New York-Syracuse-Tonawanda • North Carolina-Laurinburg • Ohio-Cincinnati-Cleveland-Dayton-Toledo-Youngstown • Pennsylvania-Lancaster-Wexford • South Carolina-Laurinburg • Tennessee-Knoxville-Memphis • Texas-Dallas-Houston-San Antonio • Virginia-Lynchburg • Wisconsin-Oconomowoc • Canada-Toronto
DAFFIN MANUFACTURING COMPANY, 3290 NORTH PRINCE STREET, LANCASTER, PENNSYLVANIA

GRAN-I-GRIT

is Best with *Eye Appeal*

For Poultry of all Ages

North Carolina Granite Corporation
Mount Airy North Carolina

GERBER'S IMPROVED ROTO-FLO DISTRIBUTOR IS DESIGNED TO SAVE YOU MONEY . . . HERE'S HOW:

PATENTED

Write About Your Distributor Problem. Literature and Installation Prints Will Be Sent on Request.

★ Low Installation Cost — cost of installation is lower than that of standard distributors.

★ No Distributor Floor Needed —a big saving.

★ Less Cupola Height Required — lower overall construction cost.

★ Added Economy — fewer bin spouts required—two legs can channel material into bin through the same spout.

★ Positive Locking—control of material flow is assured.

★ Greater Flexibility — almost no limit to number of bins which may be served.

★ Better Material Flow — even with lower cupola, pitch is good.

★ Legs cannot plug — reduced fire hazard and elimination of damage to motors and belts.

★ Positive Dust Control — reduces danger from dust explosions — simplifies housekeeping —assures against loss through dust leakage.

GERBER SHEET METAL, INC.
520 SOUTH THIRD STREET • FE 8-8461
MINNEAPOLIS 15, MINNESOTA

before you buy — see the great new GRANT BULK FEED BODY

QUALITY MADE . . . TO MAKE MONEY FOR YOU

★ 15" wide apron for unloading each of two compartments. Front compartment has cut-off slides. Receiving hopper slide.

★ Feed box and running boards are rugged, 12-gauge steel. 3" channel frame.

★ Standard equipment includes 14' auger (reaches 16' 6" from ground). Extensions optional to reach any height.

★ Controls located at right rear, discharge auger on left for easy load spotting.

★ Van Rudden pump for power take-off. Two Slave pumps drive apron, lift auger and extension auger.

GET ALL THE FACTS FROM:

GERBER SHEET METAL, INC.
520 SOUTH THIRD STREET • FE 8-8461
MINNEAPOLIS 15, MINNESOTA

18 Recommendations for Growing Pullets Compiled by AFMA, Published in Leaflet

CHICAGO—The Nutrition Council of the American Feed Manufacturers Assn. has issued "18 Management Recommendations for Growing Pullets," according to an announcement by W. T. Diamond, AFMA secretary-treasurer.

Mr. Diamond said, "These recommendations are the result of 24 months of arduous work by the council, and the splendid cooperation of the U.S. Department of Agriculture and the 48 land-grand colleges and experiment stations." AFMA is offering the recommendations in leaflet form with color and illustrations, and selling them in quantity at 2½¢ each.

Mr. Diamond stated, "In May, 1957, the Nutrition Council's management committee started their painstaking task of developing these recommendations. During the intervening two years they have conducted a voluminous correspondence of questionnaires and proposals. They checked with industry specialists four times, and with the U.S. Department of Agriculture and poultry department heads of land-grant colleges and experiment stations on two separate occasions."

The pattern of thorough checking and obtaining agreement has been followed in developing each of the 10 sets of "uniform management recommendations" issued by the AFMA Nutrition Council during the past 10 years.

Other sets of recommendations previously issued include those for: chicks and broilers, laying flocks, breeding turkeys, growing turkeys, brooding poults, raising dairy calves, swine, sow and litter, growing fattening swine and swine breeding-gestation.

Each of these sets are published in leaflet form and are also available from AFMA in quantity at 2½¢ each.

The listed recommendations which apply to pullets from 12 weeks to production, are as follows:

General Recommendations

1. Pullets and cockerels should be raised separately during the growing period (except in breeding flocks).

2. Pullets should be treated for external and internal parasites, depending on a demonstrated need.

3. Vaccinations to be considered are Newcastle, Infectious Bronchitis, Laryngotracheitis, and Fowl Pox, depending upon local conditions.

4. To prevent or control cannibalism, pullets should be debeaked.

5. The following linear feet of feeder space should be provided per 100 growing pullets:

	Full Feed	Restricted Feed
In confinement ..	40	44
On Range	36	40

("Linear foot" is defined as "one foot of feeding or watering space. For example, a six foot feeder open on both sides has 12 linear feet of feeding space. The same principle applies to watering space.")

6. Each 100 pullets should be provided from ½ to 1 ft. of grit hopper space, depending on rearing methods.

7. Each 100 pullets should be provided the following waterer space: (a) One gravity flow waterer (8 gal. or equivalent); (b) one round automatic or jet flow waterer, or eight linear feed of trough type waterer. Waterers should be placed not more than 15 ft. from feeders.

8. When roosts are used, a minimum of 6 or 7 in. of roost space should be provided. A ventilated, wire-covered droppings area should be used.

9. Provide nests for growing pullets before production begins.

Confinement Rearing

10. Pullets reared in confinement should be provided the following floor space per bird. Light breeds—2 sq. ft.; heavy breeds—3 sq. ft.

11. At the time pullets are put into the growing house, provide at least 2-4 in. of suitable litter, free from dust, mold, or other injurious material.

12. If pullets are reared on wire, it should be of 12 or 14 gauge, and of 1x2 in. mesh.

13. Keep the growing house as open as possible to get maximum air movement without drafts.

Range Rearing

14. Weather permitting, pullets may be placed on range at 8 weeks of age.

15. It is recommended that 400-500 be the maximum number of pullets per acre depending upon conditions of the range. Range should be rotated at least every year.

16. Range shelters should be large enough to accommodate 100-150 pullets. Allow at least 1 sq. ft. per bird.

17. Range shelters, waterers and feeders should be moved as often as necessary to maintain sanitation on the range area.

18. Pullets should be housed at 18-20 weeks of age, or near the start of production.

Central Soya Promotes Frank B. Tisdale

FT. WAYNE, IND.—The promotion of Frank B. Tisdale to the position of manager of the Master Feed & Grain Co., Orangeburg, S.C., has been announced by the Central Soya Company, Inc., Ft. Wayne.

Mr. Tisdale joined Master Feed & Grain in July, 1956. He was superintendent of both the grain elevator and the feed mill until March, 1958, when the operation had grown to such an extent that a superintendent was required for each of the two operations. At that time Mr. Tisdale was named feed mill superintendent.

Prior to joining Central Soya, Mr. Tisdale had been manager of the Orangeburg Gin Co.

It's DANNEN for GRAIN and FEED INGREDIENTS

- Bran
- Shorts
- Linseed Meal
- Cottonseed Meal
- Soybean Oil Meal
- Meat Scraps
- Sugar
- Defluorinated Phosphate
- Feed Supplement Urea
- Dried Skim Milk
- Dried Buttermilk

DANNEN

DANNEN MILLS, INC.

Grain and Jobbing Division
St. Joseph, Mo.
Phone: Adams 3-0161

GIVE HIM ADVICE HE'LL APPRECIATE

(THE CATTLEMAN WHO THINKS "SALT IS SALT")

REMIND HIM TO ORDER MORTON T-M SALT. Even though salt is a small part of his feed bill, Morton Trace-Mineralized Salt helps increase feed efficiency so all his feeds do a better job. He'll appreciate your reminding him—and he'll be back regularly to do more business with you. What's more, Morton T-M is a quality product you can recommend with confidence to any livestock producer. It is a profitable item backed by strong promotion that helps make it sell easily.

TO ADD MORTON T-M SALT TO YOUR LINE, JUST WRITE MORTON SALT COMPANY, CHICAGO 6, ILLINOIS

MORTON TRACE-MINERALIZED SALT

CONSUMER PROMOTION

Radio, TV and magazines are helping you get bonus sales for your EGGtober Feeds with Terramycin*.

Pfizer

Chas. Pfizer & Co., Inc., Brooklyn 6, N.Y.
Science for the world's well-being

*Terramycin Brand of Oxytetracycline

More Large Turkey Growers Said to Be Mixing Own Feed

By DAVID MARTIN
Special Writer

BERRYVILLE, ARK.—Large-scale turkey growers in this north Arkansas area have turned to an increasing extent to mixing their own rations, according to agricultural officials.

"It was either reduce operating costs or go out of business in many cases," said one official.

The official said that some of the larger growers, with heavy investments in equipment and facilities, decided to prepare their own rations or have them prepared by custom millers and mixers.

(Some smaller growers with moderate investments in houses and range equipment turned to "integration" contracts. In this area they generally receive 30¢ per head plus half of the profits for carrying the birds through brooding and ranging.)

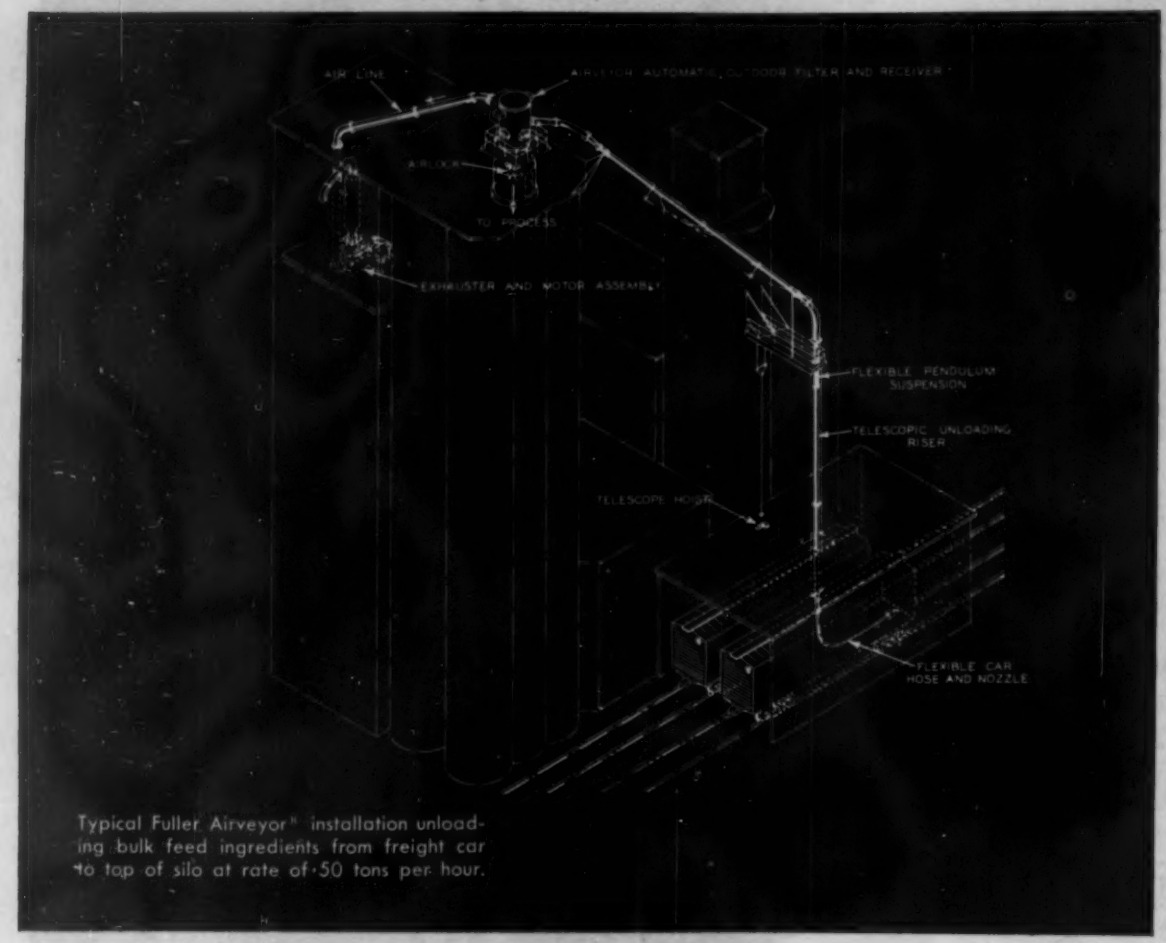
Eugene Powell of nearby Green Forest is one large turkey operator who mixes his own rations. Mr. Powell, who operates a feed store and mill as a related enterprise, has been increasing the size of his flocks while other operators were making reductions. He said use of his own feeds helped him remain in business and show a profit. He has 71,000 turkeys on feed this year. He delivers his feeds to tanks or feeders in his own bulk trucks.

Another turkey operator said, "I can buy good quality northern grain and make my own rations cheaper than I can buy special formulas from a large feed concern. I feel I can mix a comparable feed.

"Broiler operators have been doing this for some time. If we turkeymen want to keep operating under the present market, we will have to do the same thing."

However, there are also drawbacks to preparation of private mixtures, agriculture officials said. They noted that a large investment is required for grains with which to make feeds, that additional equipment is needed in some cases and that operators must maintain constant checks to assure good quality rations.

Agriculture officials said other practices are being used to lower costs. These include strict sanitation control, use of sweet sudan pastures, maintenance of laying flocks to produce hatching eggs and staggered marketing.



Typical Fuller Airveyor® installation unloading bulk feed ingredients from freight car to top of silo at rate of 50 tons per hour.

How Fuller Pneumatic Bulk Materials Handling Can Help You Expand Plant Capacity

When plants processing dry, finely-divided bulk materials greatly expand production and bulk storage facilities, Fuller pneumatic equipment is most likely to take on the expanded materials handling job.

For example, a major Midwest feed company had been using a mechanical system to unload freight cars of barley, wheat, shorts, bran, dehydrated alfalfa and other feed ingredients. But, when the plant recently increased its number of storage bins from 10 to 40 and stepped-up deliveries of these ingredients a faster, more efficient unloading system was needed. The answer was a Fuller Airveyor® vacuum system—operated by one man at a pushbutton control. This system conveys as much as 50 tons of bulk feed ingredients an hour. The Airveyor® pneumatic lines were installed easily. Sanitary sealed-in system seldom needs maintenance and is inherently self-cleaning.

Consider the low initial cost and many operating economies of Fuller pneumatic conveying systems when you plan to increase plant capacity. Write or phone outlining your problem. Fuller will gladly furnish additional information with appropriate recommendation. 1178 A-399

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Paul Zimmer Named To Cyanamid Position

NEW YORK—Paul R. Zimmer has been appointed a field investigator for the agricultural division of American Cyanamid Co., New York.

Paul R. Zimmer

According to Dr. W. P. Johnson, manager of Cyanamid's animal industry field development department, Mr. Zimmer will be assigned to the Midwest region, with headquarters in Kansas City. Prior to joining the company, Mr. Zimmer was a research technician at the University of California, specializing in animal nutrition. He obtained his B.S. and M.S. degrees at South Dakota State College.

Pay Raise Approved

BUFFALO — By unanimous vote, members of Grain Elevator Employees Local 1286 Aug. 26 approved an agreement for a 15¢ hourly increase for about 250 workers in 10 Buffalo-area elevators.

John R. Roberts, local president and business representative, said the increase came under a wage re-opener provision in the three-year contract. The present contract has two years to run. It can be re-opened next year for wage negotiations. The contract expires Aug. 15, 1961.

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Techniques, Vitamin Work Set for Program Of Research Council

WASHINGTON, D.C. — The role vitamins play in nutrition and various techniques of study will receive particular attention here during the annual meeting of the Animal Nutrition Research Council Oct. 14 at the Shoreham Hotel. The council's session will be conducted in connection with the annual meeting of the Association of American Feed Control Officials.

The council's meeting will deal primarily with the technical projects committee and its program.

Research discussion involving vitamins will cover these subjects: "Standards and Diets for Vitamin K Research"; "The Relative Biopotencies of Various Forms of Vitamin E," and "Collaborative Evaluation of the Proposed ANRC Vitamin A Reference Standard."

A portion of the program time will be devoted to a symposium on "The Use of Various Disciplines in Nutrition Research," which will be moderated by Dr. Myron Brin, assistant professor of medicine and biochemistry, State University of New York.

Panelists and their subjects of discussion will be: Dr. Daniel Steinberg, chief, section on metabolism, National Heart Institute, "Studies of Cholesterol and Bile Acid Metabolism Using Tracer Technique"; Dr. Leon L. Miller, professor of radiation biology and biochemistry, University of Rochester, "The Intact Perfused Organ and Possible Application of This Technique to Nutrition Research"; Dr. Harry Eagle, chief, laboratory of cell biology, National Institute of Allergy and Infectious Diseases, "The Nutrition and Metabolism of Human and Animal Cells in Culture," and Dr. Brin, "Apoenzyme-Coenzyme Relationships as a Tool to Assess Vitamin Adequacy."

Participating in the discussions related to vitamin research will be: Vitamin K research—Dr. Leo Norris, Cornell University; Dr. Douglas V. Frost and Dr. H. S. Perdue, both of Abbott Laboratories, and Dr. Paul Griminger, Rutgers University. Vitamin E—Dr. Lloyd D. Matterson, Dr. W. Pudelkiewicz and Miss Martha Dicks, all of the University of Connecticut. Vitamin A reference standard—Dr. Stanley R. Ames, Distillation Products Industries; James C. Fritz, Dawe's Laboratories, Inc., and Henry L. Witz and J. P. Mattingly, General Mills, Inc.

Dr. Dale R. Lindsay, assistant chief, division of research grants, Department of Health, Education & Welfare, will talk at the luncheon on "Sources of Support for Animal Nutrition Research." He will be introduced by Dr. O. L. Kline, director, division of nutrition, Food & Drug Administration.

Pfizer Appointments

NEW YORK — Branch managers have been appointed at the Chamblee (Atlanta), Ga., and Dallas, Texas, distribution centers of Chas. Pfizer & Co., Inc., New York. F. Charles Goerke, formerly branch manager at Dallas, has been named to the same post at Chamblee. He is succeeded at Dallas by Richard G. Stocker, who transfers from the company's San Francisco distribution center, where he was office manager.

NEW FEED MILL

BONDURANT, IOWA—The Farmers Elevator Co. here says its new multi-unit feed mill is near completion. The mill will include mixing units, a crimper and a pelleter. The co-op also has added a 300,000 bu. flat grain storage unit. This will bring the total storage capacity to 975,000 bu., according to Keith Jones, manager.

Robert Ioset Promoted By Dow Chemical Co.

MIDLAND, MICH.—Robert M. Ioset has been placed in charge of animal health projects for the agricultural chemicals development section of the Dow Chemical Co., Midland. His duties will involve development of new products for field use from Dow's research in veterinary chemicals and animal nutrition.

Robert M. Ioset

Mr. Ioset has been with Dow's agricultural chemicals sales department for the past two years, representing Dow to the feed and veterinary trades in southeastern states. He has a B.S. degree from the University of Minnesota, and an M.S. degree from the University of Tennessee, with majors in animal husbandry and agricultural economics. Before joining Dow he was an instructor in animal husbandry at the University of Tennessee, and worked for Wilson & Co. in Brazil.

Illinois Turkey Meeting Program Announced

URBANA, ILL.—The program for the annual fall meeting of the Illinois State Turkey Growers Assn. Sept. 17 has been announced by Prof. S. F. Ridlen, poultry extension specialist at the University of Illinois. The meeting will be held at the Clarence Ziemer Turkey Farm at Elmwood, Ill.

From 10 to 12 a.m. the group will visit the facilities and turkey flocks at the Ziemer farm. After a turkey dinner Gerald Bonnett, president of the association, will give a welcoming address, and the group will meet Mr. and Mrs. Ziemer.

Scheduled addresses include "Cutting Production Costs," by D. D. Moyer, A. E. Staley Mfg. Co., Decatur, Ill., and "Where to from Here?" by L. A. Wilhelm, Quaker Oats Co., Chicago.

A panel on the subject, "What We Want in a Packaged Turkey," and moderated by Mr. Ridlen, will include remarks by: Judith Telford, Kauffman Turkey Farm; Nyla Gorham, University of Illinois; Sally Whelan, Peoria (Ill.) Journal-Star, and Leah Tipton, Central Illinois Light Co. They will speak on behalf of the housewife, extension specialist, journalist and home economist, respectively.

Final speaker will be Frank A. Donnelly, Frank A. Donnelly Corp., Chicago, who will present a "Market Forecast 1959-60."

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In addition, all three plans help improve feed conversion, step-up growth, and eliminate sub-clinical infections. Buildup of resistant organisms has never been a problem with nf-180—no unwanted side effects because nf-180 is non-toxic.

Why settle for less than nf-180 protection? Review your turkey disease problems, then set up the nf-180 program which will fit your needs. For complete details on nf-180, talk with your Hess & Clark representative, or write, wire, or call for the Turkey Feed Medication Kit to Feed Products Manager, Hess & Clark, Ashland, Ohio.

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Compare nf-180 (furazolidone) with other turkey feed medications

DRUG	Growth Stimulation	Typhoid	Pullorum	Paracolon	Paratyphoid	C. R. D. Sinusitis	Blue Comb	Hexamitiasis	Synovitis	Ulcerative Enteritis	Blackhead	Stress periods
*nf-180 (furazolidone)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Chlortetracycline	YES	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	YES
Oxytetracycline	YES	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO	YES
Bacitracin	YES	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES
Penicillin and Streptomycin	YES	NO	NO	NO	NO	YES	YES	YES	NO	NO	NO	NO
Penicillin	YES	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO
12½ Penicillin plus 37½ Bacitracin	YES	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES
Erythromycin Stearate	NO	NO	NO	NO	NO	P-? T-YES	P-? T-YES	NO	P-? T-YES	NO	NO	NO
2—Acetylamino 5—Nitrothiazole	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	P-YES T-YES	NO
4—Nitrophenyl. Arsonic Acid	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	P-YES T-NO	NO
A Sulfa—Tin—Arsenical Comb.	YES	P-? T-NO	P-? T-NO	NO	NO	NO	P-YES T-NO	P-YES T-NO	NO	NO	NO	NO

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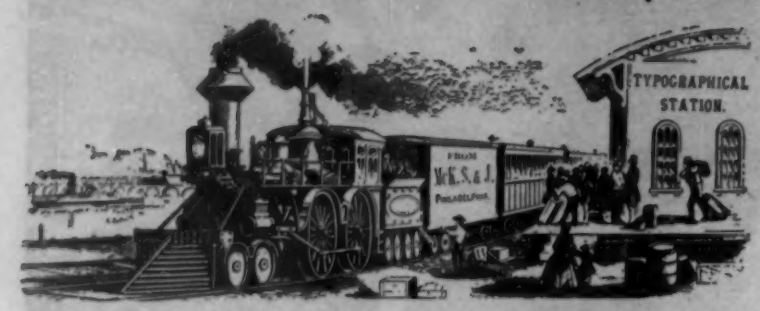

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Manitoba Studies Feasibility of Cow Pool Idea

WINNIPEG—A preliminary study of the feasibility of organizing a cow pool in Manitoba has been completed by M. Daciw, dairy branch of the Manitoba Department of Agriculture. Investigations so far have indicated that "producing milk economically by operating large cow pools looks very promising." But, as Mr. Daciw explained, a more detailed study may be advisable.

The study, a budgetary analysis of large-scale milk production, was made under the direction of the department of agricultural economics and farm management of the University of Manitoba.

Under consideration is the operation of a cow pool in the greater Winnipeg milk shed to produce high quality milk economically so that dairymen with a small number of cows can continue to operate, according to Mr. Daciw.

Different production techniques of milk production have been studied and the methods that may contribute to the success of the cow pool were selected.

The cow pool, Mr. Daciw said, will provide services for milking and care of lactating cows only and the costs and returns are estimated on this basis in the study.

Returns were estimated on a per stall basis for four different sizes of dairy herds—120, 240, 360 and 720 cows—and for different levels of milk production per cow at 1,000-lb. intervals. The range in milk production used was 8,000 to 12,000 lb. per cow during a 305-day lactation period and 1.2 cows per stall annually.

Retain Ownership

Members of the cow pool will retain ownership of their dairy cattle. The depreciation and interest on the dairy cattle investment, the cost of raising or purchasing replacements and the cost of maintaining dry cows must be estimated by each member and deducted from the returns from the cow pool to arrive at his profit, Mr. Daciw explained.

Costs at the cow pool include the purchase of all the feed. Members supplying hay and grain will be paid market value of the feed according to quality. The average market value of hay was estimated at $15 ton. The members' return from the cow pool is for the sale of milk only and does not include income from the sale of feed.

Estimated members' annual net receipts for milk from the cow pool per stall will vary from a loss of $94 to a profit of $301. This variation depends on the level of milk production per cow and the size of the dairy herd.

Increasing the level of milk production from 8,000 to 12,000 lb. per cow increased the net returns by $165 for the 120, 240 and 360-stall cow pool. For example, the returns were increased from a loss of $94 to a profit of $71 for the 120-stall cow pool.

In the study, hypothetically increasing the size from 120 stalls to 720 stalls increased the net returns from $71 to $301 at the 12,000-lb. level of milk production per cow, and increased returns from a loss of $94 to a profit of $124 at the 8,000-lb. level of milk production. "As the level of milk production per cow can be expected to vary in any cow pool, size of herd is a very important factor in determining the success of the business," Mr. Daciw commented.

The study showed that all dairy costs except feed decreased as the size of dairy herd was increased and the point of diminishing returns was not reached at the four sizes of herds. Herds of 120 cows would operate at a loss except at very high levels of milk production.

Comparison of Milking Systems

Herds of 240 cows may be able to use a herringbone parlor more economically than a pipeline system of milking. Investigations showed that the job of milking can be completed in five hours with one milking and another man moving the cows from the stanchions to the parlor. The other three hours per shift can be used in barn cleaning, feeding cows and washing equipment. The same procedure would be followed by the afternoon shift. Only four workers would be required daily instead of five required for pipeline milking. The need for further investigation was indicated.

Labor efficiency increased with larger herds and also by changing from pipeline to herringbone milking parlor.

The total investment in buildings and equipment decreased from $591 to $349 per stall for the 120 and 720-stall cow pools, respectively.

Mr. Daciw said management and high quality labor are considered essential for success.

Dow Chemical Moves Northwest Sales Office

SEATTLE, WASH. — The Dow Chemical Co. announces its Northwest sales office has occupied new quarters on the second floor of the Pacific Mutual Building, 307 Broad St., Seattle.

According to F. R. Armbruster, manager, the entire office operations area is laid out around a teletype communications "hub" which relays customer orders to Dow manufacturing locations throughout the country via the company's private line teletype network.

The Northwest office services markets for Dow's major product lines, industrial chemicals, plastics, magnesium and agricultural chemicals in the five-state area of Washington, Oregon, Idaho, Montana and Alaska.

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No. 7648—Grain Cleaner

Superior Separator Co. announces a new 8-cylinder grain cleaner called the Commander 8. The unit divides grain into seven separate products and the eight cylinders provide high capacity. A larger fan gives more air for better aspiration, the company says. Increased grain-spread permits greater "put through" in the aspirator, it was noted. New features include vanes to provide

straight airflow, an adjustable air bleeder in the aspirator to prevent dust settling in dust pipe, a micrometer screw air control for more accuracy and flexibility of operation, and a self-cleaning scalper to eliminate clogging and reduce maintenance, the company said. One improvement, according to company literature, is a patented rotating outer trough which can be inverted for complete cleanout. For more information about the cleaner check No. 7648 on the coupon and mail.

No. 7628—Dairyman's Promotion

Hess & Clark, Inc., announces a fall "Dairyman's Special Promotion" which will offer 12 Pen-FZ Syringes, one NFZ Puffer and one free Taylor Dial Thermometer. The promotion is packaged in a three-color "packer." The thermometer can be used both indoors and outdoors and comes in black and red colors. The Pen-FZ Syringes are used for controlling mastitis. The NFZ Puffer is used for protection against wounds, cuts or scratches. For details about the offer, which expires Nov. 13, check No. 7628 on the coupon and mail.

No. 7651—Boiler Bulletin

Superior Boiler Works has published a bulletin on its line of Scotch Marine Boilers. The illustrated bulletin contains information about the features of the line, plus schematic drawings of the inner workings of a boiler. Illustrations are of various installations and parts. A complete specification sheet is also included. For copies of the bulletin check No. 7651 on the coupon and mail to this publication.

No. 7641—Magnetic Separator

Magnetic Engineering & Manufacturing Co. announces MEMCO "High Power Plate Magnets" for removal of tramp iron, and fine contaminating iron from foodstuffs, chemicals, drugs and other materials in belt conveyors,

vibrating conveyors and chutes. A portable suspended plate magnet, with vibrating tray and secondary plate magnet, which can be moved to different locations to operate as a protecting separator for varied products in a single plant having multiple small run lots, is one of the magnets offered. According to company literature, in a typical installation, the product passes under the suspended plate magnet and over a permanent plate magnet for added protection. Check No. 7641 on the coupon and mail to this publication for more details.

No. 7643—Salt Bowl

A salt bowl has been offered by the Morton Salt Co. The bowl, made of polyflexon with stainless steel fittings, offers the following advantages, according to the company: It will not rust, it is easy to clean, can be wall

or stanchion mounted, can be easily mounted or unmounted, is light in wight and enables the use of economical loose salt. The bowl provides a convenient way to feed "free choice" salt in the dairy barn, the company said. For more information about the salt bowl, check No. 7643 on the coupon and mail to this publication.

No. 7654—Feed Body Options

Gaddis Bros. Manufacturing Co. announces that its model PM30 self-unloading bulk feed body is now available with additional optional items. The unit is a hopper type unit in a range of sizes from 8 ft. in length to 20 ft. for mounting on trucks with cab to axle dimensions from 60 in. to 144 in. The optional item includes complete hydraulics to power the unit. In addition, it is also possible to equip the unit with power controls for raising and lowering the final discharge auger into the unloading position. The model is all-steel welded construction and features positive action compartment

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- ☐ No. 7649—"New Leader" Spreader
- ☐ No. 7650—New Package Size
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- ☐ No. 7653—Cattle Cobalt Bullet
- ☐ No. 7654—Feed Body Options
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dump doors which act as agitators to prevent bridging of feeds in the unit. The extra large weather-proof loading hatches slide out from the center of the body, rather than folding back, which enables the body to be loaded under low overhangs. More information is available by checking No. 7654 and mailing.

No. 7650—New Package Size

Warfarat, a rodenticide produced by Hess & Clark, is now being marketed in a new package size and design, the company announced. The package is wider and taller and now

weighs 1¼ lb. It incorporates the basic Hess & Clark colors of red, yellow and black. The 4 lb. size contains eight 8 oz. self feeders. Further details about the changes can be obtained by checking No. 7650 on the coupon and mailing.

No. 7646—Impact Mill Literature

The Entoleter Division of Safety Industries, Inc., has announced the publication of a four-page illustrated piece on its ControMil, a contra-rotating centrifugal impact mill. Included in the folder are facts and figures on wear resistance; motor, rotor and installation specifications, and information on applications for grain, food mixes and basic chemicals, minerals and ceramics. The company produces mixers and grinders for a wide range of abrasive and non-abrasive materials. For copies of the literature check No. 7646 on the coupon and mail.

No. 7649—"New Leader" Spreader

Highway Equipment Co. announces the New Leader L-72S Spreader with extra steep sloping sides (about 60°) designed to haul and spread material of a damp and dense consistency. In addition to the steep sides and formed contour for better flow, the company says, the equipment features laterally reinforced endgates. A high carbon steel drive shaft in the conveyor gear case turns the 30 in. conveyor chain. Twenty inch spinners uniformly distribute material, the company said. The spreader is available in four different body lengths from 9 ft. to 15 ft. with

DOUBLE-BARRELLED PROTECTION!

The Douglas #33 Respirator

For dusting or spraying with *light concentrations* be sure you have the protection of this easy to use respirator. Lightweight, flexible molded rubber facepiece forms a gas-tight seal against your face—yet slips on and off without discomfort. For outdoor use of these Douglas products: Tetrafume, Tetrakil, Tetraspot, Tetrakote, Topkote 77.

When spraying *heavy concentrations* indoors—Tetrafume, Tetrakil, Tetraspot, Tetrakote, Topkote "77", Special Mill Spray, or "88" Improved Farm Bin Spray—use the Douglas #44 Fullface Gas Mask. The "All-Vision" Facepiece gives unobstructed vision. Harness allows ample working freedom . . . goes on and comes off easy. Both units available NOW at your local elevator or your nearby Douglas dealer.

Grain Sanitation Division

Douglas Chemical Company – 620 East 16th
North Kansas City, Missouri

Strong Scott

"THE STRONG-SCOTT QUICK-CHANGE HAMMERMILL SOLVED ALL OUR GRINDING PROBLEMS..."

says Alvin Berg, manager of Farmers Elevator Co-Operative, Green Valley, Wisconsin

A new office and store are adjacent to the modern mill and elevator. The Co-Op also includes a lumber yard and locker plant.

Alvin Berg manages the entire Co-Op, presently employing seven people.

"When we offer custom grinding, that's just what it is," says Al. "We change grind size almost every batch. Without the quick-change on our Strong-Scott Hammermill, we just couldn't operate as we do. In fact," added Al, "our Hammermill has been the answer to turning out high capacity grinding when you really need it." Contractor at Farmers Elevator Co-Op was Arnold Schroeder.

"As for custom mixing, we give our customers fast service and a quality product, thanks to our Strong-Scott 1-ton and 2-ton Triple Action Mixers," added Al.

With just a pull of the handle, any one of the five special type screens for the Hammermill are dropped into place and ready to go—it's just that easy and fast.

Walter Wendt, mill employee at Green Valley, adds just the right amount of molasses to feed in the Triple Action Mixer.

Hinged doors on the bottom of the Strong-Scott Triple Action Mixer provide easy access for cleaning.

EQUIPMENT DESIGNED FOR BETTER PROCESSING

The Strong Scott Mfg. Co.
451 Taft Street N. E.
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SOLVE YOUR FERTILIZER PROBLEMS

One of these three Specialized Simonsen Units will put you on the road to More Fertilizer Profits.

FEEDILIZER

Simonsen's brand new Feedilizer spreads fertilizer as accurately as any unit on the market. Yet it is a double-barreled investment because it's also a completely hydraulic bulk feed delivery body. Delivery auger reaches 21-foot bins, swivels 360 degrees. It's a year around workhorse.

MIXER SPREADER

With Simonsen's unique Mixer Spreader you can get into the complete fertilizer mixing and spreading business with minimum cost. Only three bins for storage of basic plant food ingredients and a Mixer Spreader will let you spread practically any fertilizer ratio needed by your customers.

REGULAR SPREADER

You can't help getting a perfect fertilizer spread with Simonsen's fertilizer spreader. Its proven wheel-drive method assures accurate spreading regardless of field conditions, weather, speed of truck or other factors. Your key to satisfied customers . . . repeat business . . . better profits.

Choose one of these units to solve any fertilizer distributing problem you have . . . easier . . . better . . . for a more profitable operation. For the full story of Simonsen's proven quality units write:

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SIMONSEN MANUFACTURING CO.
DEPT. FS QUIMBY, IOWA

respective capacities from 5.2 to 8.8 cu. yd. For details check No. 7649 on the coupon and mail.

No. 7652—Feed Grinder Bulletin

An illustrated color bulletin on the "Aristocrat" and "Peerless" feed grinders has been released by Gruendler Crusher and Pulverizer Co. The various parts of the grinders are shown and actual installations are described and illustrated. Specifications and detailed descriptions of each of the units are included. Performance records and capacities are outlined and a schematic drawing shows operational factors of a grinder. For copies of the bulletin check No. 7652 on the coupon and mail.

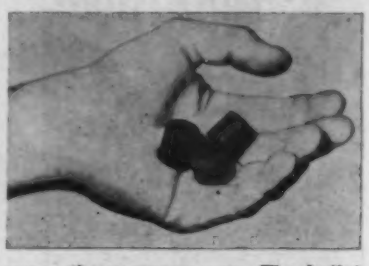
No. 7655—Hydraulic Mobile Mill

Iowa Portable Mill Co. announces the development of a completely hydraulic mobile mill. The hydraulic system reduces repair, down time and wear and tear on the mill, the company said. Every operation of the

mill can be handled from the ground. The molasses mixer, grinders and tank mixers are driven by a separate diesel power plant which offers economy, company literature said. The mills are available with or without truck bodies. For details check No. 7655 on the coupon and mail.

No. 7653—Cattle Cobalt Bullet

Nicholas of America Limited, who recently developed a cobalt bullet for sheep, has announced that a similar bullet has been developed for cattle. The single bullet will provide beef animals with a continuous daily supply of cobalt for a full year or



more, the company says. The bullet is administered directly into the gullet with a special ejector gun or an ordinary balling gun. Once swallowed, the bullet remains in the animal's forestomach, releasing a full daily dose of cobalt. The system is known as "heavy pill" therapy, meaning that each animal carries its own supply of cobalt in the paunch at all times. For more infrmation about the product check No. 7653 on the coupon and mail.

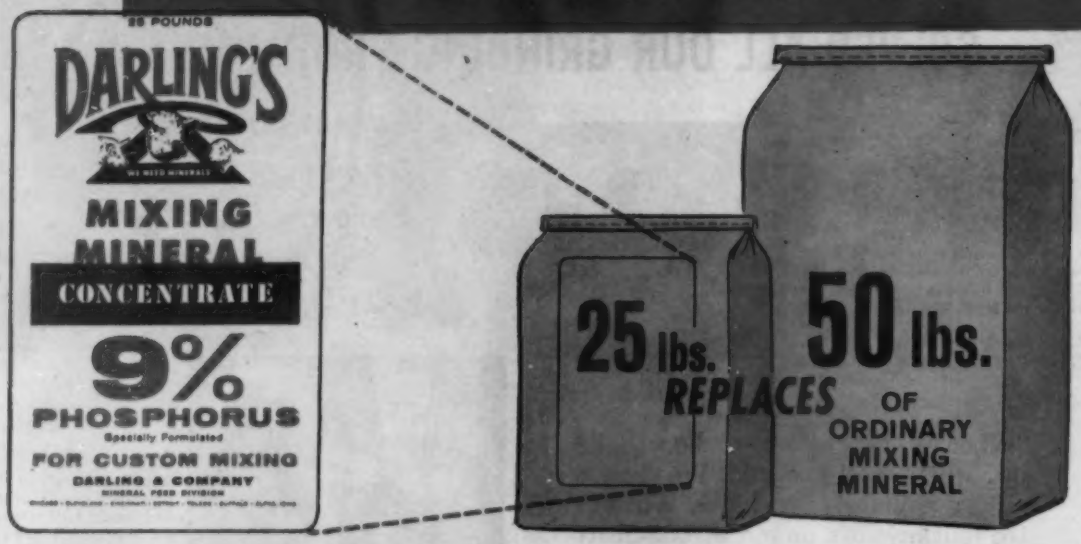
Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number on the coupon and forwarding it to Feedstuffs.

No. 7601—Dust collector, Ripco Air Systems.

No. 7602—Bulk fumigant applica-

NOW A MIXING MINERAL CONCENTRATE



especially formulated for custom mixing!

MORE PROFIT FOR YOU, THE DEALER

★ higher margin per ton
★ saves *one-half* of your freight bill
★ saves *one-half* of your storage space and costs
★ small, compact 25 lb. bag for easier handling
★ store *twice* the supply handy to your mixer

A BETTER BUY FOR YOUR CUSTOMER

★ ***9% phosphorus***—up to *three times* the phosphorus content of ordinary mixing minerals
★ *all* the phosphorus highly available to livestock
★ nutritionally sound, with a calcium-phosphorus ratio based on latest research
★ includes all necessary trace minerals
★ only top-quality ingredients

From One Manufacturer...
A COMPLETE MINERAL PROGRAM

DARLING'S Mixing Mineral Concentrate
DARLING'S Free-Choice Mineral Mix
DARLING'S Weather-Resistant Mineral Block

IMPORTANT!
If your distributor does not carry DARLING'S complete line of Minerals, phone collect to YArds 7-3000, Chicago, for name of DARLING'S Mineral distributor in your area.

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coxy protection in all kinds of weather...
all year 'round with NICARB in your
broiler starter and grower rations.
Merck & Co., Inc., Chemical Div., Rahway, N. J.

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SOYBEAN OIL MEAL
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43% PROTEIN — 4% FAT
The High - Fat, High - Protein, High - Energy
Basic Ingredient for All Feeds and
DOG FOOD RATIONS
PREFERRED by Feed Manufacturers from Coast to Coast
AVAILABLE in carloads and truckiots throughout the year
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Protect Feed Machinery from Damage and Downtime
AT LOWEST COST*
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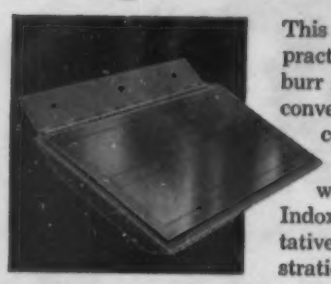
STEARNS
INDOX V PLATE MAGNET

Now you can get the best magnetic protection for feed processing machines at big, big savings. It's the new Stearns Indox V permanent plate magnet — size for size, dollar for dollar, the best, lowest cost "hardware" remover in the business. The reason is Indox V — a new, tremendously powerful permanent ceramic magnet that only Stearns can offer you.

Designed for Present Machines



This new Series 50 Stearns plate magnet fits practically all present designs of hammer mills, burr stone mills, rotary cutters, feed mixers, conveyor feeders, agricultural implements. It comes in sizes from 4-inch to 48-inch.

Safeguard your equipment against "hardware" with the very best—insist on a Stearns Indox V plate magnet. Your Stearns representative can prove its superiority with a demonstration. He'll prove it's the lowest cost, too.

*Let us show you facts and figures.

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Gentlemen:
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NEW SOYBEAN STORAGE UNIT—Capacity of this new soybean storage unit built by Gibbs-Harris Drier, Inc., at Wynne, Ark., is 423,000 bu. The 100 by 200-ft. building has four elevators and is equipped for both cleaning and drying. C. T. Gibbs, secretary-treasurer of the company, said the firm buys beans from farmers or charges a fee for storing them. It also stores beans and acts as a selling agent.

tor, Ferguson Fumigants, Inc.

No. 7603—Feed Fat Bulletin, Procter & Gamble Distributing Co.

No. 7604—Shovel-barrow, Gar-Bro Manufacturing Co.

No. 7605—Fall pack promotion, Chas. Pfizer & Co., Inc.

No. 7606—Booklet on coccidiosis, Dorn & Mitchell Laboratories, Inc.

No. 7607—Air vibrator bulletin, The National Air Vibrator Co.

No. 7608—Bagging scale, Richardson Scale Co.

No. 7609 — Temperature systems, Hot Spot Detector, Inc.

No. 7610 — Half-round aeration, Rolfes Grain Aeration Companies.

No. 7611—Materials handling unit, Conveyors & Dumpers, Inc.

No. 7612—New size package, Abbott Laboratories.

No. 7613—Checkweigher literature, Toledo Scale.

No. 7614 — Bulk storage tank, Leach Manufacturing Co.

No. 7615—Auto leasing study, Foundation for Management Research.

No. 7616—Push button hog feeder, Parker Feeders, Inc.

No. 7617—Large grain bin, Martin Steel Corp.

No. 7618—New catalog, Burrows Equipment Co.

No. 7619—Bulletin on stream splitters, Sprout, Waldron & Co., Inc.

No. 7620—Hard-grains roller mill, Ross Machine & Mill Supply Inc.

No. 7621—Fresh egg merchandiser, Tobias Enterprises.

No. 7622 — Power drum handler, Specialty Machinery Corp.

No. 7623 — Dual motor vibrator, Cleveland Vibrator Co.

No. 7624 — Conversion truck unit, Ripco Air Systems.

No. 7625—Equipment catalog, the Bauer Bros. Co.

No. 7626—Crusher bulletin, Metals Disintegrating Co., Inc.

No. 7627 — Drag plate conveyor, Strong-Scott Manufacturing Co.

No. 7628 — Dairyman's Promotion, Hess & Clark.

No. 7629—Moisture barrier, Knott Chemical Co.

No. 7631 — Handle bag, Hudson Pulp & Paper Corp.

No. 7632—Automatic batching control, Toledo Scale Corp.

No. 7633—Vibration inducer, Martin Engineering Co.

No. 7634—Pig raising information, Chore Boy Manufacturing Co., Inc.

No. 7635—Mastitis ointment, Merck & Co., Inc.

Carl Cooley Dies

PORTLAND, ORE. — Carl Cooley, 75, long time member of the Pacific Northwest grain industry, died recently in Eugene, Ore. Mr. Cooley served as office manager and cashier of Archer-Daniels-Midland Co., Portland, from 1937 until his retirement two years ago.

He attended the old Albany College at Albany, and later worked for the Alexander department store in Pendleton. H. W. Collins Grain Co. at Pendleton, Farmers National Grain Co-op at Portland, Portland office of Continental Grain Co., and then Archer-Daniels-Midland.

Hy-Line Poultry Farm Geneticist Suggests a Poultry Research Plan

DES MOINES, IOWA—A call for a "Master Plan" for poultry research was issued here recently by Courtney P. Allen, geneticist in charge of blood typing for Hy-Line Poultry Farms.

Speaking to more than 300 scientists from the Poultry Science Assn., Mr. Allen stressed the need for a master plan encompassing a broad range of related sciences to act as a unit to study life and suggested the chicken as the "most appropriate animal."

"This plan must not neglect the independent worker and it must encourage him," Mr. Allen stated. "However, it must be much broader in scope than local or regional labs, for its aim is much higher. This unified approach would resemble the atomic bomb or satellite programs where the impossible was done in several years, instead of never.

"The goal of this unit would be to study the action of the gene and its economic effects on the population. Using the newer tools of immunology, biochemistry, and physiology; under the direction of geneticists, veterinarians and nutritionists; and using procedures designed by the biometrician, we could expect real progress in applying the sciences and learning to work together."

Mr. Allen pointed out that considerable progress has been made in poultry research in recent years, particularly in blood typing where interesting parallels with human blood groups have been discovered. "Human and poultry blood groups are not the same, but both humans and chickens have a number of different systems with many contrasting genes. Blood groups in chickens are associated with disease just as in humans.

"Poultry scientists should consider it a challenge to put all of the results to work understanding one animal, and as we achieve success one can visualize how near we will be to understanding life itself. We can approach this goal using the chicken as the animal and the antigen-antibody systems they contain as one of the newer tools."

Members of the Poultry Science Assn. toured the following exhibits set up at the Hy-Line breeding farm at Johnston to show the research functions at Hy-Line: Laboratory, blood typing, field testing of experimental crosses, commercial hatchery, egg shipping, egg quality, pedigree records, research hatchery and breeding stock.

Other Hy-Line research centers in Iowa are located near Waukee, Dallas Center and Minburn.

DIVIDENDS DECLARED

CHICAGO — Directors of Abbott Laboratories recently declared the regular quarterly dividends of 45¢ a share on the common shares and $1 a share on the preferred shares. Both are payable Oct. 1 to shareholders of record Sept. 9.

This 100 pound container of

PREMIX

hetrogen K*

Menadione Sodium Bisulfite

will provide positive vitamin K fortification to 400 tons of your poultry feed for only 4½c per ton

Hetrogen K provides rapid, highly effective protection against hemorrhagic disease. It is the best buy for convenient Vitamin K fortification of your poultry feeds. Assured maximum stability. Economically priced, too! Also recommended for medication of drinking water, Hetrogen K is available as a free flowing concentrate. Write for full data.

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* U.S. Patents 2,331,808 & 2,367,302

Changing to Scotch O Lass is Profitable!

FLOYD TRIMBLE
Manager

"Changing to Scotch O Lass BOOSTED OUR DRIED MOLASSES SALES to 77 tons last year. This was certainly a profitable move for us. We find that Scotch O Lass compliments any feeding program."

Citizen's Grain Co., Lapel, Indiana

CHANGE TO THE BRAND THAT'S IN DEMAND ... SELL Scotch O Lass

You should make this profitable change too.

Scotch O Lass will make you added sales, added profit. Scotch O Lass is the dry molasses product that moves fast because your customers demand Scotch O Lass once they've tried it.

Always uniform in quality—always free flowing—extra palatable—and like Mr. Trimble says—"Compliments any feeding program."

Vy Lactos LABORATORIES, INC.

1901 East Euclid Avenue Des Moines 13, Iowa

A. E. Rankin Joins Timmons & Evans Co.

KANSAS CITY—The appointment of A. E. (Bill) Rankin as general construction superintendent has been announced by W. A. Timmons, Jr., president of Timmons & Evans Co., Kansas City.

A. E. Rankin

Mr. Rankin will be in charge of all construction, equipment installation and field supervision. For the past four years he was field service engineer for Sprout, Waldron & Co., Inc., Muncy, Pa., servicing feed and flour mill equipment in the Central States area. He formerly had worked as general millwright foreman for Gateway Chemurgic Co., Lincoln, Neb., and as service engineer for Shanzer Manufacturing Co., San Francisco.

11 Loans Approved for Feed and Grain Firms

WASHINGTON—Government loan approvals to small firms in July included 11 feed and grain firms, according to a recent announcement by Wendell B. Barnes, administrator of the Small Business Administration. Mr. Barnes said loans to small firms declined sharply in July from the record high level of the previous month.

July business loan approvals totaled 216 loans for $10,420,000, compared with 601 approvals for $31,588,000 in June—the largest dollar amount in any one month in the agency's history.

There was also a falling off of business loan applications. During July, 681 applications for loans were received, compared with 902 in June of this year and 840 in July a year ago.

Loan approvals to feed and grain firms in July, 1959, include the following:

Bright Future Seed Cleaning & Delinting Plant, Inc., Hughes, Ark., $55,000, seed cleaning and delinting; Moultrie (Georgia) Farm Center, Inc., $100,000, feed products; St. Ansgar (Iowa) Grain & Feed Co., $120,000, feed dealer; Seymour (Iowa) Elevator, Inc., $37,000, grain storage; Spen-Well Feed Co., Winchester, Ky., $15,000, feed mill, and Tarkio (Missouri) Pelleting Corp., $180,000, manufacturing feed.

Benton Du It Feeds, St. Joseph, Mo., $100,000, grain dealer; A. C. Till, Arapahoe, Neb., $56,000, grain dealer; Brownville (Nebraska) Grain Co., $60,000, grain dealer; Midstates Grain Co., Inc., Grand Island, Neb., $160,000, grain storage, and Prewett Grain Co., Inc., Black, Texas, $76,000, grain elevator.

YOUR PROTEIN HEADQUARTERS:

FISH MEALS
★ 70% Herring Meal
★ 70% Full Meal
★ 60% East Coast Fish Meal

"PRIDE" ANIMAL PROTEINS
★ 50% Meat & Bone Meal
★ 60% Digester Tankage
★ 80% Blood Flour

● IN BULK OR SACKED ●

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MILLING COMPANY MINNEAPOLIS, MINN.

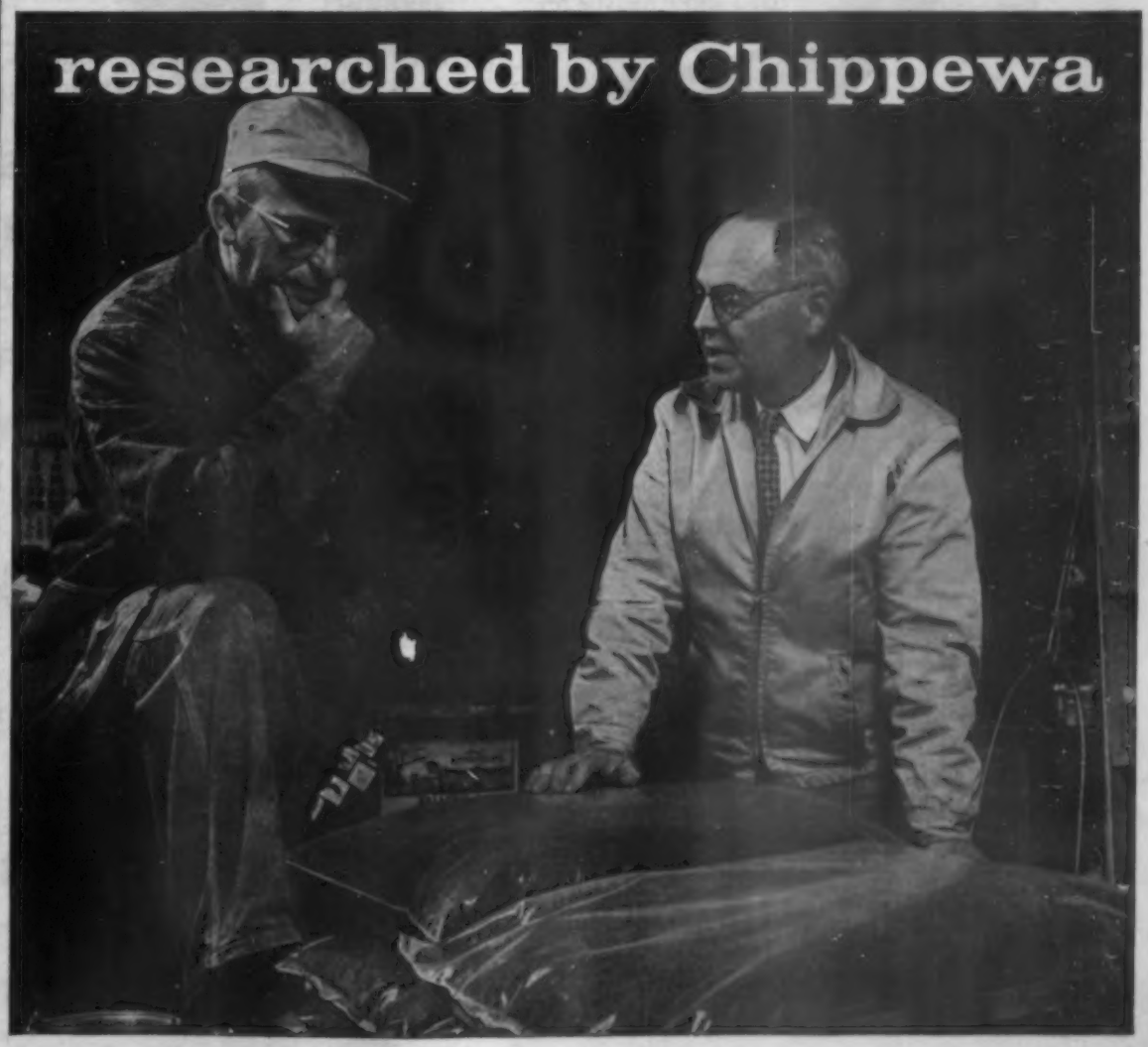
NOW..show a man the feed he's buying with new heavy duty polyethylene packaging!

Chippewa's new transparent bag developed for fertilizer packaging is a big boon to feed store men because it lets them show customers what they're buying . . . and the bag can be printed in four colors for real display value! The heavy duty, 100% polyethylene bag offers the equal advantages of being moisture proof and insect proof: feed can even be stored out of doors, in any kind of weather! Palletizing is no problem, and breakage in shipment and handling has proved to be less than ¼ of 1%. This bag, with its many outstanding characteristics, is one of many new products from Chippewa Plastics, the leader in polyethylene film research, technical know-how, and the development of specialized equipment for quality-controlled mass production. Chippewa engineers will work with you in testing and incorporating this new bag in your production lines. For further information, contact:

Department of Feed Packaging
CHIPPEWA PLASTICS CO.
Division of Rexall Drug and Chemical Company
Chippewa Falls, Wisconsin

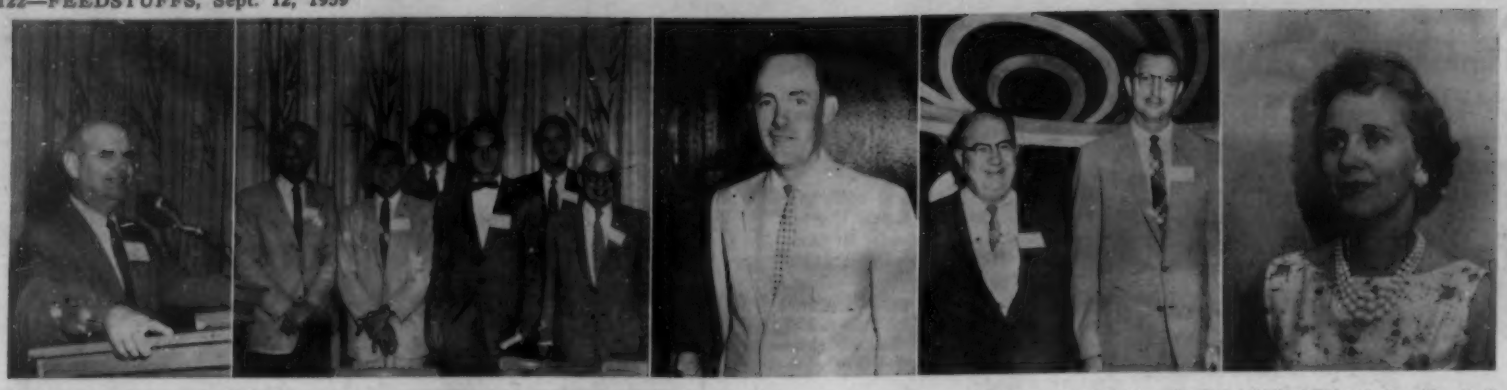
The mark of leadership

researched by Chippewa



GIVE HIM ADVICE HE'LL APPRECIATE

Remind him to order Morton T-M Salt. See page 107.



KENTUCKY SPEAKERS—Speakers at the recent Kentucky Feed Conference in Louisville are shown above. In the first picture is A. Q. Allen, University of Kentucky, and in the second picture are (left to right): Robert B. Grainger, J. J. Begin, and Dr. J. R. Jacobson, all of the University of Kentucky; William A. Mitchell, Early & Daniel Co., Cincinnati, Ohio; Dr. N. W. Bradley, University of Kentucky, and Russell C. White, Cincinnati district of the Food & Drug Administration. In the third picture is Dr. C. E. Barnhart, University of Kentucky, and in the fourth picture are James W. Browning, Commodity Stabilization Service, and Oakley M. Ray, American Feed Manufacturers Assn. In the last picture is Mrs. Florence French, home economist from Chicago, who spoke at the ladies lunch and card party.

BIG BABE Pre-starter Milk Replacer

15% FAT

28% PROTEIN

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1220 FLOUR EXCHANGE BUILDING
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Everywhere!

Want to make extra profits and at the same time make your customers mighty happy? Yes? Then take a tip from us and stock this popular

BURROWS Light Weight PORTABLE ALUMINUM ELEVATOR

For Ear Corn, Corn, Grain, Feed, Poultry Litter & Many Other Materials

It's absolutely tops in elevators of this type. Has many outstanding features that appeal to farmers and poultry men. In active demand the year 'round.

Light weight. Quickly positioned and easily operated by one man. Rugged, durable construction. Rust proof and practically wear proof. A tremendous time, labor and money saver.

16 and 20 ft. lengths. With gas engine or motor, or without either. Immediate delivery.

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Beef Quality Not Closely Related To Growth Factors

Beef cattle production characteristics, such as birth weight, weaning weight and rate of gain are not closely related to the animal's carcass quality, according to research studies reported by the U.S. Department of Agriculture.

Performance tests, as now used, appear to give only a slight indication of the tenderness or percentage of lean meat in a beef carcass. At least this was true for the 210 steers used in tests at the U.S. Range Livestock Experiment Station, Miles City, Mont., conducted by scientists of USDA's Agricultural Research Service and the Montana Agricultural Experiment Station.

Indications are that improvement in carcass quality, therefore, will possibly have to be based on direct selection for desired carcass characteristics by progeny testing of sires, and internal meat-area measurements through the use of ultrasonic or other devices.

Not Closely Related

In the group of steers studied, neither slaughter nor carcass grade was closely related to tenderness. Both grades were associated more with a steer's width across the back and the amount of fat in its body than it was with the animal's length or amount of lean meat.

Birth weight, weaning weight, average daily gain and final weight at the end of the feeding period were all inter-related. However, this interrelationship was so slight that neither birth nor weaning weights could be used to predict later performance and was of little or no value in estimating a steer's grade at slaughter. Slaughter grades, under the conditions of these tests, were correlated with feedlot gains and final weight.

Eight steers sired by each of seven Hereford bulls were raised each year of the four-year study. These steers were weaned at an average age of 180 days and placed in feedlots for 252 days. Records were kept of birth, weaning and slaughter weight, plus daily feedlot gain and slaughter grade. After slaugher, records were made of carcass grade, dressing yield, tenderness grade and 23 weights and measures of important carcass areas such as rib eye muscle, thickness of fat over 12th rib, width of shoulder at first rib, width of hindquarters and length of body.

Close relationships between any of the live animal appraisals and one or more carcass traits could afford an opportunity for carcass improvement through established records of performance. But the researchers found that none of the growth records was closely related to any measure of carcass quality. Relationships found in this study, however, would probably differ from those in animals marketed at a constant weight or a constant finish.

There was a tendency for birth weight to be associated to a slight degree with amount of lean, bone, and tendon in the slaughtered steers. Dressing yield, weight per unit length of the carcass, and tenderness were not affected by gain in the feedlot of final weight of the steers. Slaughter grade did not serve as a good estimate of the dressing yield in the steers used in these tests.

An animal's width was more closely correlated with the amount of fat on the carcass and the animal's body length was more closely related with the amount of lean meat in the dressed carcass. This was true whether lean and fat were considered in terms of weight or percentage. Although relationships were not high, they may be of some importance in affecting ideas of proper beef type.

Materials Handling Plan Begun by SSC

RICHMOND, VA.—A new materials handling program built around a 2 h.p. electric feed grinder and mixer was introduced recently by Southern States Cooperative, Richmond, according to a report in a recent issue of SSC's publication, Service Guide.

SSC is reported to be the sole distributor in its operating territory for the machine, Mix-Mill, manufactured by Belle City Engineering of Racine, Wis., and Bluffton, Ind. SSC says the mill will measure, mix and grind four different materials at the same time and can produce up to 1,200 lb. finished feed an hour.

The machine performs with the use of gravity feed overhead storage bins, or with augers delivering the feed from ground level bins.

Says Service Guide, "The Mix-Mill makes it possible and practical to install an automatic feed processing installation on any farm engaged in efficient feeding of dairy cattle, livestock, hogs and poultry."

SSC reports that its materials handling program will increase the volume of supplements and feed processing machinery and related items handled by the co-op's agencies.

For the farmer, SSC says, the program will: (1) Reduce the amount of labor required on the farm, (2) cut the cost of preparing home-grown grains for on-the-farm feeding and (3) help reduce the cost of producing meat, milk and eggs.

Drier Installations

SAN FRANCISCO — Construction on 18 drier installations in Kansas and Texas has been completed, according to McKinley Bissinger, president of the Shanzer Manufacturing Co., San Francisco.

Mr. Bissinger says the installations range in size and capacity from about 150 to 1,000 bu. per hour. He says most of the units will be employed in drying corn and milo.

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A little goes a long way — 4 gallons of TETRAFUME will completely treat a whole boxcar full of grain. For elevator, apply 2 gallons per 1,000 bushels of grain.

Grain must be turned from 48 to 72 hours after applying TETRAFUME. This prevents reabsorption of old odors and moisture.

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F-13

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SALES MEETING—Attending the recent Peavey Feed Mills sales meeting in Minneapolis are Tone district managers representing a six-state area. Pictured (left to right) seated around table, Albert Habel, Gerald Zirbel, Duane Schultz, Angus Stephan, H. G. Soeldner, Paul Iverson, Leland J. Scribner, Sidney Hanson, Jan Bents, Herbert Zarns, Floyd Erickson, Kenneth Schmitt, W. G. Manz and William Zirbel; at rear of room (directly behind table): F. T. Heffelfinger II, general manager; E. G. Cherbonnier, Tone Feed advisor, and J. R. Lindell, sales manager. Others on either side in background not identified.

Nutrition Findings Included in Report On Mississippi State Poultry Research

STATE COLLEGE, MISS.—An annual report on poultry research at Mississippi State University Agricultural Experiment Station was recently published in Mississippi Farm Research.

Contents of the report by James E. Hill, department head, follow:

IMPROVEMENT OF BROILER QUALITY: In two years out of three, crosses of egg and meat stock gave excellent egg production in the lines tested, especially when these eggs were compared with meat type birds. The females from these crosses mated to various inbred, non-inbred and commercial type meat males gave variable results as far as growth and feed efficiency were concerned. Offspring from the commercial males in general gave better results when growth and feathering were used as a criterion, than any of the other crosses tested; however, when the inbred males were used, feed efficiency was slightly better than that obtained from commercial males.

CAGES VERSUS FLOOR: Information on egg production, mortality, culling rates, egg weights, exterior quality and interior quality have been summarized for three systems for three years. These three systems consist of floor, floor replacement and cages.

Production was best for the group on floor replacement, which also had the highest mortality. Cages had the lowest mortality and the highest percent culled and replaced. More large and extra large eggs were produced from the cages than from the other systems. There was no difference in egg quality among the various systems except the cages produced twice as many inedible eggs as the other two systems.

ANTIBIOTICS IN LAYING RATIONS: Different levels of Terramycin and Vigofac were added separately and in combination to rations fed continuously and intermittently to Single Comb White Leghorns in cages (60 hens per treatment).

Only one of the six groups receiving antibiotics laid at a higher rate than the control group. This was the group that was fed a ration containing 50 grams of Terramycin per ton continuously.

In another test, covering 12 months, the performance of 936 layers that were fed a ration containing 100 grams each of Terramycin and zinc bacitracin four days per month was compared with the performance of an equal number of layers not receiving antibiotics. The birds fed antibiotics laid at the rate of 46.6% compared to 45.7% for the control, and the pounds of feed per dozen eggs for the antibiotics were 6.55 and for the control 6.73.

LIGHTS AND RESTRICTED FEEDING: Egg production of groups that received all-night lights during different periods from 0 to 8 weeks and restricted fed groups ranged from 40% to 53%. Both control groups laid at a rate of 49% to 515 days of age. Mortality from housing to 515 days of age ranged from 6% to 49%.

Lights during the growing period tended to reduce the age at sexual maturity resulting in an increase in small and peewee eggs; whereas, restricting the feed to 26 weeks of age reduced the number of small and peewee eggs.

If birds restricted to 26 weeks of age are given a laying period of 365 days after they reach 5% production, the producer's income will be increased.

IMPROVEMENT OF PIGMENTATION: Dehydrated alfalfa meal (20% protein), corn gluten meal and yellow corn were found to have relative biological values of 30.7, 46.5 and 100.0, respectively, when each feedstuff was used to provide approximately 4 mgs. of xanthophyll per pound of ration. Varying the calorie-protein ratio of the ration (35-60), added fat (5% level), lecithin (2% level), 3-nitro-4-hydroxyphenylarsonic acid (45 gm/-ton) and a commercial pigmentor (0.15% level) did not significantly influence pigmentation. However, pigmentation was improved somewhat in two of the three instances when 3-nitro was used.

ALL-MASH VERSUS MASH-GRAIN FOR LAYING HENS: In a test of 10 months duration, using 12 groups (42 per group) of White Leghorn birds, total egg production was not noticeably affected by the feeding system nor the presence of supplementary grit. Likewise, egg size, specific gravity of the eggs, livability and body weight gain did not appear to be affected. However, feed efficiency was much better for the mash-fed groups than for the mash-grain fed groups.

MINERAL SUPPLEMENTATION OF TURKEY RATION: Replacement of 25% and 50% of the supplemental phosphorus in turkey rations with phosphorus, using soft phosphate, did not reduce growth, feed utiliza-

tion or increase mortality to 20 weeks of age. The incidence of hock disorder was less in the groups of birds receiving the rations containing soft phosphate than for the control groups fed a ration containing defluorinated rock phosphate as the sole source of supplemental phosphorus.

Supplemental zinc (50 p.p.m.) improved growth, feed utilization and feathering and reduced the incidence of hock disorder over 50%; whereas added molybdenum (0.2 p.p.m.), potassium (0.2%), iron (20.0 mg./lb.), copper (2.0 mg./lb.) and cobalt (0.2 mg./lb.) had no apparent effect on the performance of the birds during the 20 week test period.

HYGROMIX AND HYGROMYCIN B IN BROILER RATIONS: The addition of hygromix to broiler rations at 0.05 and 0.1% levels decreased the incidence of large round worms. The control groups of birds averaged 5.33 worms per bird. Groups fed the rations containing 0.05 and 0.1% hygromix contained only 0.83 and 1.10 worms per bird. Growth and feed utilization were improved little, if any, by the addition of hygromix to the ration. During the second trial hygromycin B (4 and 8 gm./ton) appeared not to effectively control round worm infestation and during the third trial hygromycin B (12 gm./ton) reduced the occurrence of the round worm, but the degree of infestation was low for all groups. No evidence of cecal worm infestation was found in any of the trials.

ENERGY-PROTEIN LEVEL FEEDS FOR LAYER RATIONS: Last year rations containing narrow and wide ratios between the energy and protein levels of the ration were fed to groups of White Leghorn birds and heavy-type birds. The calorie-protein ratio of the ration ranged from 55 to as high as 78. Even with this wide variation in the ratios between energy and protein, essentially no differences were noted with respect to egg production and feed efficiency within the breed. From the results obtained, no conclusions can be drawn as to the proper calorie-protein ratio for layers at this time.

It appears that both the light and heavy-type birds can tolerate a wide range of energy-protein ratio in the ration without serious ill effects.

Tranquilizers Aid Cows

STATE COLLEGE, MISS.—Dairy cows can be kept contented with tranquilizers, according to Dr. J. T. Miles, head of the Mississippi State University dairy department.

Dr. Miles says tranquilizers given to first-calf dairy heifers an hour before they are milked the first time will save "wear and tear" on the heifer's nerves and the milker's nerves.

Dr. Miles also reports that cows separated from their newborn calves accept the situation more calmly if given a tranquilizer at the time.

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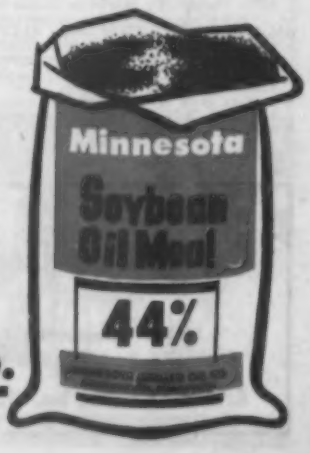

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BAUGHMAN SF5 BULK BODY, THREE compartments; can be mounted on your truck. Phone State 98141, McLaughlin, Ward & Co., Jackson, Mich.

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SALE: ALUMINUM TANKS, 22,000, 18,000, 3,000 gal. Dewatering presses; Davenport No. 1A, 3A, Louisville 8-roll 36". 3—Louisville rotary steam tube dryers, 6'x50', 6'x 25'. 4' dia. stainless steel spray dryers. Perry, 1403 N. 6th St., Philadelphia 22, Pa.

ONE USED 1952 HIGHWAY TRAILER, equipped for bulk feed delivery, 24 ft. long, complete with full length screw, 15 H.P. gasoline engine, and 2-piece unloading conveyor. Good condition. Contact Fred Cook, Archer-Daniels-Midland Co., Minneapolis 2, Minn.

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FOR SALE—NEW AND RECONDITIONED Richardson, Burrows, O. E. and Fairbanks bagging scales; Union Special, Minneapolis and Wilcox & Gibbs sewing heads. Whizzer bagging conveyors, bins. Winborne, Mill Equipment Service, Williamsburg, Iowa.

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1½-TON KELLY DUPLEX MIXER, 7½ H.P. motor; Duplex hammer mill, model L, crusher attachment, 50 H.P. motor; 50 H.P. starter and motor; Duplex corn cracking machine, 4 sizes corn, 5 H.P. motor; corn sheller, 175 bu. hour, nearly new, 7½ H.P. motor; Zip molasses meter, 11.7 lb. and pump. Will sacrifice all or part. C. S. Holder, Frankford, Del., phone Selbyville 8845.

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SALESMAN — NATIONAL FEED MANU-facturer seeking salesman experienced in agricultural field for work in Michigan territory. This is an opportunity to establish a satisfying career in a growing industry. Write with qualifications to W. G. Stokes, District Sales Manager, 12730 Beck Road, Plymouth, Mich.

FEED MILL SUPERINTENDENT — ME-dium-sized, growing AAA-1 Midwest manufacturer needs man experienced in directing working force for most effective manpower utilization. Write giving complete background and qualifications. Address Ad No. 5173, Feedstuffs, Minneapolis 40, Minn.

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SALES MANAGER — OUR EXPANSION program requires a sales manager to take charge of sales, augment, train and supervise our present sales force in eastern Iowa and western Illinois. Must be experienced in agricultural sales and know how to sell premium quality feeds. Send resume stating marital status, education and experience to Ad No. 5194, Feedstuffs, Minneapolis 40, Minn.

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GENERAL FOREMAN — SEVEN YEARS' experience, medium size feed mill. Knowledge of feed mill operation. Age 41. Excellent health. Seeking opportunity rather than large starting salary. Will relocate. Good recommendations. Address Ad No. 5182, Feedstuffs, Minneapolis 40, Minn.

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Swine Conference Planned Nov. 19-20

GRUNDY CENTER, IOWA—Workshop discussion sessions designed to bring together the best thinking in the nation on swine industry problems will be the main business feature of the second National Swine Conference scheduled for Iowa State University, Ames, Nov. 19-20.

Discussion of subjects ranging from hog raising through marketing of pork is scheduled for the eight workshops, according to Keith Myers, executive secretary of the National Swine Growers Council, and conference chairman.

The workshops will begin after the noon luncheon on the opening day which will be highlighted by an address by Ezra Taft Benson, secretary of agriculture.

Scheduled to speak at the general session on the morning of Nov. 19, are Dr. James H. Hilton, president of Iowa State University, Dr. O. Burr Ross, head of the animal science department at the University of Illinois, and Dr. Elmer R. H. Kiehl, chairman of the agricultural economics department at the University of Missouri.

Homer Davison, president of the American Meat Institute, will speak at the evening dinner session.

The workshop discussions will continue through the afternoon, and resume in the evening with reports of the workshop groups scheduled for the conference windup on the morning of Nov. 20.

The workshop subjects will be on breeding and reproduction, nutrition, housing and equipment, management systems, disease control, marketing live hogs, pork processing and merchandising and quality goals in pork.

Mr. Myers said this second conference is being sponsored by 28 national organizations and trade groups for professions and industries allied to the production, marketing, processing and merchandising of hogs and pork.

Nov. 2 Is Deadline for NTF Contest Entries

MOUNT MORRIS, ILL.—Final notice announcing the 1959 National Turkey Federation Youth Achievement Award program has been sent to turkey industry leaders and college personnel related to farm youth activities, according to G. L. Walts, secretary of the NTF youth achievement award committee.

Each state turkey association selects its top winner from youths actively engaged in supervised turkey projects to compete for national honors. The entries are then forwarded to NTF for final judging. All entries must be made through the respective state turkey associations and not direct to the National Turkey Federation. Deadline for entries in the 1959 contest is Nov. 2.

The 1958 winners each received an engraved trophy, an all-expense paid trip to the 1959 NTF convention and a $500 scholarship to the university or college of their choice.

Funds for the scholarships are provided by Dr. Salsbury's Laboratories, Charles City, Iowa, and Hess & Clark, Inc., Ashland, Ohio. State winners receive a special citation and plaque from NTF.

Members of the NTF Youth Achievement Award Committee are: Dr. Howard Zindel, chairman, Michigan State University, East Lansing, Mich.; G. L. Walts, secretary, National Turkey Federation, Mt. Morris, Ill.; M. C. Small, executive secretary-treasurer, National Turkey Federation, Mt. Morris, Ill.; H. L. Shrader, extension poultryman, U.S. Department of Agriculture, Washington, D.C.; Dr. J. Holmes Martin, Purdue University, Lafayette, Ind., and G. E. Annin, University of Wisconsin, Madison, Wis.

Researchers Discuss Feed Additives, Pelleting at Virginia Beef Cattle Event

By Special Correspondent

BLACKSBURG, VA. — The use of feed additives and implants, and pelleting feed were included in the topics discussed at a recent Beef Cattle Short Course at the Front Royal Research Station of Virginia Polytechnic Institute.

More than 85 beef cattlemen from northern Virginia attended the affair. Members of the VPI Extension Service and U.S. Department of Agriculture specialists delivered addresses and headed discussions.

Dr. J. P. Fontenot, VPI department of animal husbandry, touched on the use of stilbestrol, hormones, tranquilizers and antibiotics.

"The feeding of stilbestrol to drylot-fed fattening beef cattle has generally resulted in a marked increase in rate and efficiency of gain. A summary of 21 experiments, in which the cattle gained 2 lb. or over per head per day, from 11 different state agricultural experiment stations shows that stilbestrol feeding resulted in an average increase of 17% in rate of gain. The values ranged from 4% to 37%. In these same experiments the average increase in feed efficiency was 12%," Dr. Fontenot reported.

He mentioned that certain precautions should be followed when feeding stilbestrol, as follows: Stilbestrol should not be fed to breeding animals; it should not be fed at a higher rate than 10 mg. per head per day; it should not be fed the last two days before the cattle go to market to prevent traces of the drug remaining in the carcass; it should not be fed to poultry, swine and dairy cattle, and there is probably no advantage in feeding stilbestrol to show cattle.

Test on Stilbestrol Implants

Dr. Fontenot also related that a summary of 15 stilbestrol implantation experiments from seven state agricultural experiment stations indicated that implanting grazing steers with 12-36 mg. stilbestrol has resulted in an average increase of 26% in rate of gain. The increase ranged from 11-49%.

"In drylot-fed fattening steers the implantation of stilbestrol at levels varying from 12 to 36 mg. per head has resulted in a 20% improvement in rate of gain. The lowest level that has given maximum response in rate of gain has varied between 12 and 36 mg. per head," the research said.

He remarked that a limited number of trials have been conducted on the effect of low level implantation of stilbestrol in grazing and drylot-fed fattening heifers. An increase in rate of gain has usually resulted. In some of the trials quite noticeable side effects were observed.

The implantation of low levels of stilbestrol in steer calves fed wintering rations has resulted in an average increase of 16% in rate of gain, he said.

"Implanting suckling calves has resulted in an average increase of 12% in rate of gain. The levels of stilbestrol used were 12 and 24 mg. Rather noticeable side effects were observed in some of the trials," the researcher said.

Speaking of stilbestrol feeding versus implantation, Dr. Fontenot said that only a limited number of experiments have been run to compare these two methods of administering stilbestrol. "Results from these experiments show that low level of implantation tended to produce a greater increase in rate of gain than the feeding. The reports which contained information on carcass quality and side effects are too limited for any conclusions to be drawn concerning the relative effects of feeding and low level of implantation," he said.

The speaker commented that it appears that Synovex implants do not affect carcass grade and dressing percent markedly.

Antibiotics

He went on to say that in older cattle the effect of antibiotics is not conclusive. In some experiments the feeding of an antibiotic has resulted in an increase in rate and efficiency of gain, in some it has had no effect, and in some it has decreased the rate and efficiency of gain.

"If the results from 32 experiments from nine state agricultural experiment stations are averaged, it is found that the feeding of an antibiotic has produced an average increase of 6% in rate of gain and 4% in feed efficiency. It appears that chlortetracycline (Aureomycin) and oxytetracycline (Terramycin) had approximately the same effect," he said.

Dr. Fontenot went on to say that when the results of 17 experiments at nine state agricultural experiment stations are averaged, it is found that the feeding of an antibiotic-stilbestrol supplement did not promote a greater increase in rate and efficiency of gain than the feeding of stilbestrol alone.

The speaker commented that the feeding of Tapazole may increase rate of gain in fattening beef cattle, as indicated in work at the Iowa Agricultural Experiment Station. Tapazole feeding increased rate of gain more when it was fed for a short period than when it was fed for a longer period. The results should be considered preliminary, and not conclusive at this time, the speaker said.

The effect of feeding tranquilizing drugs has been tested in a number of experiments with cattle fed wintering and fattening rations. In some instances an increase in rate of gain resulted, in some a decrease resulted, and in some essentially no difference in gain was observed, Dr. Fontenot reported.

He noted that Iowa researchers have reported that feeding high moisture corn to fattening cattle resulted in a 7-8% increase in rate of gain. They also found that feeding an enzyme preparation in the supplement resulted in a marked improvement in rate and efficiency of gain in cattle fed corn containing 10 or 14% moisture.

Pelleting

Prof. G. W. Litton, head of the VPI animal husbandry department, talked on feed preparation. He listed the advantages of pelleting as: Automation in feeding, reduction of labor in handling, lowering transportation space and storage costs, reducing feed wastage, and usually an improvement in rate of gain from pelleting roughages, and a more favorable feed conversion rate from pelleted concentrates.

Disadvantages were seen as higher cost, and the fact that pelleting equipment for the farm is not practical yet.

Until machinery is available for the individual farm, Prof. Litton says that farmers should consider chopping their hay. There was not as much difference in gains shown by pellets over chopping, as with pellets over long hay in tests. However, an improvement in feed efficiency was noted in all tests.

The speaker noted that agreement has not been reached on: Kind of pellet or wafer that is most promising; proper ratio of concentrates to roughage; fineness of grinding prior to pelleting; quality of roughage to use for greatest benefit, and why gains and efficiency increase sometimes and not others.

Prof. Litton said that the greatest promise is on pelleted roughages, and he added:

"1. Some tests show gains to be increased by 20-25% by pelleting roughages. The total gain is less on high quality roughages, but the percentage improvement may be greater.

"2. Consumption of feed is usually increased.

"3. Digestibility in lamb tests is essentially unaffected, but heating during the pelleting process may have a favorable influence on the end products in the rumen.

"4. Having all feeds present together, rather than each going separately through the process of digestion, is thought to be an advantage.

"5. Fine grinding allows a harder pellet to be made, but rumination may stop if feed is too finely ground prior to pelleting. This may not be detrimental."

Feeding Replacement Calves

Dr. R. C. Carter of VPI says that before deciding on a definite feeding program for replacement calves a farmer needs to know what will be done with the calves after the winter feeding period.

With heifer calves, Dr. Carter said, it will make a great deal of difference whether they will be bred as yearlings or as two year olds. Steer calves should be wintered differently, depending on whether one plans to sell them in spring yearling sales, fatten as yearlings, sell them in fall as yearling feeders, put them in the feedlot after the pasture season, or carry them over for a second summer's grazing.

Work at various experiment stations around the country on high and low levels of feeding was discussed by Prof. Carter.

Prof. C. C. Mast, VPI beef cattle specialist, pointed out that beef cows should be wintered to make money for the farmer.

The farmer who makes money with beef cattle will utilize as much of his home-grown feed as possible, said Prof. Mast. While the cows wintered on a recommended ration lost weight at the rate of a quarter to a third of a pound a day in experiments, they still produced calves as good as cows which gained a half pound a day on full feed, and in the spring, soon made up their weight loss on grass, he reported.

FEED PLANT—B. M. Priode (right foreground) takes visitors on a tour of the feed plant at the Front Royal Experiment Station of Virginia Polytechnic Institute. The visitors were attending the recent Beef Cattle Short Course at the station. Prof. C. C. Mast, beef cattle specialist at VPI, and one of the short course speakers, is shown at left. Mr. Priode is superintendent of the station.

Montana Cattle Feeders Day Scheduled Oct. 9

BOZEMAN, MONT. — Results of tests with diallyldiethylstilbestrol and diallylhexestrol will be discussed Oct. 9 at the Montana State College fourth annual Cattle Feeder's Day, according to Dr. O. O. Thomas, animal nutritionist.

Dr. Thomas said other discussions will include work on feeding Agrozyme to steers and feeding completely pelleted rations with either 30 or 70% roughage to steers both on irrigated pasture and in drylot.

Other progress reports will be presented on wintering heifers and steers with various feed additives and summer grazing of steers with a tranquilizer implant (Trifluomeprazine).

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BROILER INDUSTRY

(Continued from page 1)

space per bird may be more profitable.

In his talk, Mr. Snyder told the Delmarva poultrymen that we must admit that "we are a group of country boys who have developed a big industry."

"Our Arkansas organization of small businesses in the broiler business got together so that we could afford to bring in competent businessmen," he said.

"Most of us are still acting like children so far as business principles are concerned. If we don't get together by mergers or some other way, and bring businessmen in to help us, we are going to find ourselves completely out. In other words, it is better to have 10 per cent of something than 100 per cent of nothing," Mr. Snyder said.

"Many people won't agree with me," Mr. Snyder said. "We don't like to lose our independence but we must do it."

Asked about his organization, Mr. Snyder said it was set up in an effort to gain the advantages of a national organization while leaving the various units as much independence as possible.

Soybean Study

The report on soybeans was the second soybean processing report presenting data from Delaware broiler feeding experiments. These tests were conducted with locally grown beans in an attempt to find ways in which they could be processed and used as an efficient, economical ingredient in practical broiler diets.

In the first test completed last June, the data were interpreted as demonstrating that broilers fed diets containing whole, unextracted soybean meal processed under the conditions of this experiment failed to grow as rapidly or utilize their feed as efficiently as birds receiving a control diet containing regular dehulled extracted soybean oil meal and stabilized feed grade fat.

Prof. T. D. Runnels and associates noted that all available reports on feeding processed soybeans in broiler diets were studied in planning the second experiment. Since no floor pen data were available on the feeding value of soybean oil, it was decided to introduce this product as an experimental variable in an attempt to isolate the portion of the processed unextracted soybeans responsible for poorer broiler growth than obtained from those receiving practical control diets.

All of the batches of soybeans used in the study were obtained from the same source and were flaked as the first step in processing. The soybean oil used in one treatment was added to the diet without further processing; the oil used in another treatment was heated to a rolling boil for 60 minutes at a temperature of 350° F.

Unextracted beans processed by the continuous method were treated as nearly like commercial extracted soybean meal as possible; facilities were the same except that the unextracted beans by-passed the solvent extractors. In batch processing, the flaked beans were ground to a fine ixture, cooked in meat scrap cookers and then dried. Total cooking times were 50 minutes and 25 minutes.

Both the experimental starters and finishers were fed as mash. Broilers in two pens which recieved commercial feed were fed crumbles as starter and pellets as finisher. The chicks used were 4,500 sexed Vantress X Arbor Acre chicks, distributed at random on the basis of equal sexes into 30 pens of 150 chicks each.

Results

For the various treatments, average eight-week weights and feed conversions were as follows (weight first and feed efficiency second): (1) Regular extracted dehulled soy plus feed grade fat, 2.62 and 2.33; (2) regular extracted dehulled soy plus crude soybean oil, 2.56 and 2.39; (3) regular extracted dehulled soy plus cooked soybean oil, 2.59 and 2.37; (4) experimental dehulled whole soybean meal (continuous process), 2.47 and 2.49; (5) experimental whole soybean meal with hulls (continuous process), 2.46 and 2.51; (7) experimental whole soybean meal with hulls (batch process —50 minutes), 2.48 and 2.46; (8) experimental whole soybean meal with hulls (batch process — 25 minutes), 2.55 and 2.39; (9) commercial feed, 2.725 and 2.165.

The researchers summarized the experiment as follows: "In this experiment, the control diet containing regular dehulled extracted soybean oil meal and stabilized feed grade fat produced the heaviest broilers with the most efficient feed utilization at eight weeks of age.

"When the feed grade fat was replaced with crude soybean oil (treatment 2) or cooked soybean oil (treatment 3), the diets produced slightly lighter weight broilers with poorer feed utilization at eight weeks of age. However, these differences were small and additional research would be required to determine whether or not there is a valid difference in the feeding value between the feed grade fat and soybean oil. There appeared to be no difference in the feeding value between the crude and cooked soybean oil.

"The continuous processed unextracted soybean meals (treatment 4—dehulled), (treatment 5—with hulls) produced results inferior to those produced by both the control and soybean oil supplemental diets. The diets containing the meal with hulls produced only slightly poorer results than those from the dehulled meal.

"The length of time the meal was cooked in the batch process appeared to affect the results in that the broilers receiving the diets containing the meal cooked for 25 minutes (treatment 8) gained more rapidly and utilized their feed more efficiently than those receiving the diets containing the beans cooked for a longer period of time (treatment 7).

"The results from this experiment indicate that the proper use of four items is needed in processing unextracted soybeans. These are cooking time and temperature to destroy the trypsin inhibitor, moisture to preserve the protein quality while cooking, and flaking to rupture the cells and make the oil available for digestion. All of the beans used in this experiment were flaked as part of their processing."

Floor Space

Other research indicated that a principle stressed for years may not be the most profitable. One square foot of floor space for broilers has been advocated by extension services and feed dealers who contract broilers. It was believed that the birds would be of better quality, show heavier weights at selling age and show improved feed conversion; also that there would be less disease and mortality.

In the recent Delaware tests, it was most profitable to give the birds only ½ sq. ft. per bird.

Broilers were divided into pens where the birds had ½, ¾, 1, and 1¼ sq. ft. The cost of production which includes everything was $0.1627, $0.1660, $0.1648, and $0.1693, respectively.

Using the results of the substation, a broiler grower would make $1,076 profit in a 10,000 sq. ft. house if 20,000 birds were grown. In the same house if 10,000 birds (the present recommendation) were produced, the profit would only be $502.

The selling price of 18¢ was used in this example. Birds raised in ½ sq. ft. would sell for a profit of 1.73¢ per pound. (18¢ market price minus 16.27¢ cost of production.) The average weight at the substation was 3.11 lb. This makes the profit per bird 5.38¢.

The 20,000 birds multiplied by 5.37¢ would be $1,076.

Birds given 1 sq. ft. of floor space had a slightly better average weight. They weighed 3.30 lb. On an 18¢ market the profit per pound was 1.52¢. Or the profit per bird was 5.02¢ (3.30 lb. times 1.52¢). And 5.02¢ multiplied by 10,000 birds would be $502.

Quality Difference

There was a difference in quality between the crowded birds and those raised with a square foot of floor space.

"Pens providing only one-half a square foot per chick started had fewer birds of grade A quality—about 4% below the average of all treatments (½, ¾, 1, and 1¼ sq. ft. space) with the percentage of grade B chickens 4.06% above the average of the test," said Frank Gordy, director of the substation.

"But there is only a difference between A's and B's and that is not too significant.

"Quality is not influenced by crowding as much as people have been thinking, particularly when buyers are not paying for quality. Quality is not generally reflected in the selling price," Mr. Gordy said.

Buyers in Delmarva make purchases on observations of quality. There is little pricing made according to dressing grades.

There are other disadvantages in the more crowded growing conditions.

"It is evident that crowding broilers decreases rate of growth, gives poorer feed efficiency and results in greater mortality," Mr. Gordy said.

More Space in Summer

Frank D'Armi, who is in charge of the broiler trials, said the year's growing of broilers showed that raising the birds on ½ sq. ft. was satisfactory except during the summer flock.

The crowded birds during the summer made keeping the house cool and well ventilated a problem. It is definitely not recommended for summer flocks.

The substation flocks received close supervision in management and disease control. A broiler grower would not ordinarily have the advantage of services and facilities at the substation, Mr. D'Armi said.

Perhaps in the past five years, broiler growers have become much better managers. If so, they could reduce the floor space.

Mr. Gordy said that growers could probably reduce floor space. It is not advisable to reach ½ sq. ft., but perhaps ¾ would be safe.

Feeders Studied

In another experiment, after observing three flocks, the researchers said it appears that there is little difference in rate of growth of broilers between round feeders and mechanical feeders. It also showed that rate of growth was comparable for each of three mechanical feeders tested. (Big Dutchman, Kitson and Keenco automatic).

There was a small difference in feed efficiency, it was reported, with the Keenco mechanical feeder having the highest efficiency of the three mechanical feeders and slightly more efficient than the round hanging feeders. However, the researchers said, because there is data on only two flocks for the Keenco feeder and only three flocks for the others, more work is planned.

TOP OF THE HOPPER

(Continued from page 2)

guess, too, that the sessions of the Midwest Feed Advertising Council, meeting in Ames, Iowa, Sept. 17, will include some discussion of the situation.

SOME RATHER ELABORATE strategy appears to be in the works in Washington among the politically-inclined economists. John Cipperly's guided tour through the pathways of the current thinking of commodity policy (and price) makers along the Potomac (Feedstuffs, Sept. 5) relates why, because of the forthcoming elections, a donation program for vegetable oils probably will not be put into effect. By allowing oil prices to sag, meal prices are likely to be held up, these officials believe. Why should an attempt be made to hold up meal prices? Well, to discourage too much expansion of hog numbers in 1960 ahead of the election. Meanwhile, government officials are reported to be planning to support pork prices with a purchase program late next spring.

It will be interesting to see how well these attempts to "manage" hog price levels will work out. Our long-range guess is that if the U.S. Department of Agriculture gets involved in a pork purchase program it will have one heck of a time extricating itself from it. It will be a costly undertaking, and might not the urban voters, who are getting more concerned by the day about government spending, give the administration some trouble at the polls? Perhaps more trouble than a "hands off" on pork supports would cause?

No attempt to help quarterback election strategy is intended here, but it should be repeated again that tampering with the economy for vote-getting purposes in the past has for the most part done much more harm than good.

RELATED, PERTINENT AND PUZZLING: Charles R. Koch, discussing "the agricultural dilemma" in the summer issue of the Farm Quarterly concludes a review of various ways of attacking the farm surplus problem with this comment:

American agriculture is faced with a production adjustment problem similar to the one many industries faced after the postwar backlog for orders was filled in the early 1950's. These industries reduced production to meet existing demands. There was no nonsense about increasing production to lower unit costs. Production was cut and the price was maintained and in many instances advanced.

The oil industry keeps supply under control by the number of days producers are allowed to pump. The automotive industry and the steel industry adjust production to the anticipated demand, and price fluctuates within a very narrow range.

Whatever combination of approaches is used, agriculture must eventually lift a page from this same book. But with millions of independent producers, who will adjust and how?

James Lugenbeel Dies

ST. LOUIS—James M. Lugenbeel, 66, formerly director of the Analytical Laboratory of Merchants Exchange, St. Louis, died in St. Louis recently.

Mr. Lugenbeel had been associated with the Merchants Exchange for more more than 40 years, and had headed the exchange's laboratory from the time of its organization in 1929 until his retirement in 1958.

The FEED MARKET

PRICE QUOTATIONS, MARKET TRENDS
OF PRINCIPAL INGREDIENTS

NOTE: Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bagged, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

A AND D FEEDING OIL

Denver: Demand fair; trend steady; supply ample; 22¢ lb., f.o.b. Denver.

Chicago: Demand fair; trend steady; supply ample; straight A feeding oil, with 10,000 units vitamin A per gram, 7@7¼¢ a million units of vitamin A, l.c.l., packed in 55-gal. drums, f.o.b. Chicago, drums included.

New York: Demand and supply good; trend firm; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 13½@15½¢, 1,500 A 15½@17¢, 2,250 A 17½@20¢, 3,000 A 19@21¢; 600 ICU, 1,500 A 16@18¢, 2,250 A 18@19½¢; f.o.b. Massachusetts, New York or Pennsylvania.

Boston: Demand and supply steady; 600 D, 1,500 A 17½¢ lb.; 600 D, 3,000 A 20¢; 300 D, 3,000 A 19½¢; 300 D, 2,250 A 18¢; 300 D, 1,500 A 16½¢; 300 D, 750 A 14¾¢; 75 D, 750 A 14½¢.

Minneapolis: Demand fair; supply ample; 10,000 A 34½¢ lb.; 300 D, 2,250 A 19¢ lb.; 300 D, 1,500 A 17½¢ lb.; 300 D, 750 A 16¢ lb.

ALFALFA MEAL

Philadelphia: Demand and supply fair; 17% $62.50.

New Orleans: Demand steady; trend firm; supply adequate; vitamin A, 17% $57@58; pellets $53@54.

Los Angeles: Demand and trend steady; supply adequate; dehydrated meal, 17% protein, 100,000 A $51, bulk; dehydrated pellet meal, 17% protein, 100,000 A $53, bulk; suncured meal, 15% protein $44@45, bulk; suncured crumbles, 15% protein $46@47, bulk.

Portland: Demand good; supply ample; trend unchanged; suncured, 15% $42; dehydrated $64.40.

Omaha: Demand, trend and supply steady; 17% dehydrated, 100,000 A units, bulk pellets $40; sacked meal $45, Omaha basis.

Memphis: Demand fair; trend steady; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $55.

Ft. Worth: Demand fair; supply adequate; dehydrated, 17%, 100,000 A $57.30 rail, $56 truck; suncured, 13%, ¼-in. grind, No. 1 $43 truck.

Cincinnati: Demand fair; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $59.50@60.50.

Kansas City: Demand fair; trend steady; supply adequate but offerings are not liberal since much of material is going into storage; dehydrated alfalfa meal with 17% protein and 100,000 units vitamin A guaranteed on arrival: regular meal $46, sacked; reground pellets $47, sacked; pellets $41@42, bulk; dehydrated alfalfa with 18% protein and 125,000 units A meal $50, sacked; meal with 20% protein and 150,000 units A $57, sacked; suncured alfalfa meal demand is very slow but supplies continue to be scarce, No. 1 fine ground $40.50@41, No. 1 ¼-in. $39, No. 2 ¼-in. $35.50@36, sacked.

Denver: Demand good; trend strong; supply ample; dehydrated $48, Denver.

Buffalo: Demand poor; trend steady to lower; supply adequate; $63, Boston.

Minneapolis: Demand good; supply adequate; trend steady; 17% dehydrated, 100,000 units vitamin A, reground pellets $48, bulk, Minneapolis; oiled reground pellets $50, bulk; sacks $1 more.

St. Louis: Demand slow; trend steady; supply limited; suncured, 13% fine $44.50; dehydrated, 17%, 100,000 A, demand slow, trend steady, supply ample $52.

Seattle: Demand fair; trend steady; supply good; 18% protein suncured $45, delivered, truck loads; 136,000 A unit dehydrated $68, delivered, truck loads.

Chicago: Demand fair; trend steady; supply adequate; carlots, 17% protein, with 100,000 units vitamin A guaranteed $53.50.

Boston: Demand slow; supply plentiful; dehydrated, 17% $60; suncured, 13% $46.50, nominal.

ANIMAL FAT (STABILIZED)

Kansas City: Demand slow from mixers; trend steady; supply ample; prime tallow 6½¢ lb., tank car.

Louisville: Demand slow; trend steady; supply good; bleachable white 6¢ lb.; white tallow 6½¢ lb.; yellow grease 5¾¢ lb.

New Orleans: Demand fair; trend steady; supply adequate; 6@6½¢ lb., tank cars.

Ft. Worth: Demand fair; supply ample; prime tallow, tank cars 6¢ lb.; drums 8½¢ lb.; f.o.b. north Texas packing plants with returnable drums.

Ogden: Supply normal; prime tallow in demand; 6¢ lb.

Chicago: Demand fair; trend steady; supply ample; carlots, bleachable fancy tallow $6.75 cwt.; yellow grease $6.37½ cwt.

San Francisco: Demand fair; supply ample; bleachable fancy 6¼¢ lb.; yellow grease 5½¢ lb.

Boston: Demand slow; supply plentiful; tallow 6⅜¢ lb.; yellow grease 5½¢ lb.

St. Paul: Feed demand good; supply ample; trend firm; bleachable fancy tallow 6¼¢ lb., f.o.b. producer's plant.

BARLEY FEED

New Orleans: Demand slow; supply ample; trend unchanged; $55@56.

Los Angeles: Demand slow; trend easier; supply ample; standard rolled $3 cwt.; standard ground $3 cwt.

Portland: Demand good; supply ample; trend unchanged; rolled $56; ground $54.

Philadelphia: Demand slow; supply fair; $47.

Ogden: Supply normal; rolled $46@51; whole barley $38@43.

Seattle: Demand and supply good; trend firm; $46, bulk, truck loads.

Baltimore: Demand fair; trend steady; supply ample; $45.50, carlots.

Chicago: Demand quiet; trend steady; supply ample; $35, carlots.

San Francisco: Demand fair; supply ample; rolled $56.50, ground $55.50.

Boston: Demand slow; supply adequate; Canadian $45.50.

BENTONITE (SODIUM)

Cincinnati: Demand steady; supply adequate; f.o.b. Cincinnati, minimum 30-ton carlots: 80 granular $31.50; 200 mesh fine $31.

Denver: Demand fair; trend good; supply ample; $21.

Chicago: Demand fair; trend steady; supply ample; f.o.b. Wyoming and South Dakota shipping points: granular, 30 mesh $16.50; fine granular, 80 to 100 mesh $13.75; powder, 200 mesh $13.50, f.o.b. Belle Fourche, S. D., minimum 30-ton carlots, 80 granular $13.50 net; 200 mesh, fine $13.25 net.

BLOOD FLOUR

Louisville: Demand slow; trend steady; supply good; $80@85.

BLOOD MEAL

Louisville: Demand dull; trend steady; supply good; $80@85.

New Orleans: Demand slow; trend unchanged; supply normal; $77@82.

Portland: Demand slow; supply ample; trend unchanged; $115.

Los Angeles: Demand slow; trend unchanged; supply light; $5.75 a unit of ammonia.

Ogden: Supply average; $92.50 ton in 100-lb. bags, f.o.b. Ogden.

Omaha: Demand and trend firm; supply adequate; $100, Omaha basis.

Chicago: Demand fair; trend steady; supply ample; carlots, 80% protein, 100-lb. bags $120.

San Francisco: Demand fair; supply ample; $8 a unit of ammonia.

BONE MEAL (STEAMED)

Buffalo: Demand good; trend steady; supply limited; $105.

Denver: Demand fair; trend firm; supply ample; $105.70, Denver.

Portland: Demand slow; supply ample; trend unchanged; $103.

New Orleans: Demand fair; trend easy; supply ample; $77@82.

Louisville: Demand dull; trend steady; supply light; $80@85.

Los Angeles: Demand fair; trend unchanged; supply adequate; imported $78, in 20-ton lots.

Ft. Worth: Demand good; supply light; $90, f.o.b. Ft. Worth, local manufacture.

Cincinnati: Demand fair; trend steady; supply fair; $100, Cincinnati.

San Francisco: Demand good; supply ample; $75.

Seattle: Demand good; trend firm; supply limited; $90, delivered, truck lots.

Chicago: Demand fair; trend steady; supply ample; carlots, 100-lb. bags $97.50.

Boston: Demand and supply steady; $100.

BREWERS DRIED GRAINS

New Orleans: Demand fair; trend easy; supply ample; $85@90.

Buffalo: Demand and supply fair; trend steady; $54, bulk, Boston.

St. Louis: Demand good; trend stronger; supply adequate; $42.

Philadelphia: Demand slow; supply fair; $51.50.

Louisville: Demand slow; trend steady; supply good; $46.

Los Angeles: Demand slow; trend unchanged; supply adequate; $49.50 bulk, $53.50 sacked.

Ft. Worth: Demand slow; supply sufficient; 26% protein $50@51, September, delivered Ft. Worth.

Cincinnati: Demand poor; trend steady to lower; supply adequate; $47.

Chicago: Demand fair; trend steady; supply ample; 26% protein $43, carlots.

Boston: Demand and supply steady; 26% $52; 22% $51@51.50.

San Francisco: Demand fair; supply ample; $54.

BREWERS DRIED YEAST

Portland: Demand good; supply ample; trend unchanged; 8⅛¢ lb.

Buffalo: Demand fair; trend steady; supply limited; $9.75 cwt.

Denver: Demand light; trend steady; supply ample; 8¢ lb., f.o.b. Golden, Colo.

Louisville: Demand slow; trend firm; supply good; 10@10½¢ lb.

Los Angeles: Demand slow; trend unchanged; supply adequate; 10¢ lb., 5-ton lots; 11¢ lb., 1-ton lots; 12¢ lb., less than 1-ton lots.

Omaha: 10½¢ lb.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

Seattle: Demand slow; trend steady; supply ample; $12 cwt.

San Francisco: Demand fair; supply good; 10¢ lb.

Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.

New York: Carlots 9½¢ lb; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., f.o.b. New Jersey.

Chicago: Demand quiet; trend steady; supply ample; carlots 9½@10½¢ lb.; l.c.l. 9¾@12¼¢ lb.

Milwaukee: Demand quiet; trend steady; supply adequate; 10@11¢ lb., carlots; 10½@12¼¢ lb., l.c.l.

St. Louis: Demand quiet; trend steady; supply fair; 9½@10¢ lb., carlots; 10½¢ lb., ton lots; 11½¢ lb., less than ton lots.

Boston: Demand and supply steady; 11¢ lb.

BUTTERMILK-CONDENSED

New Orleans: Demand slow; trend unchanged; supply average; $4.25@4.30 cwt.

Philadelphia: Demand slow; supply light; $4.25 cwt.

Louisville: Demand dull; trend steady; supply nil; $4.25 cwt., nominal.

Los Angeles: Demand slow; trend unchanged; supply adequate; 5½¢ lb. in 100-lb. lots; 4½¢ lb. in 500-lb. lots.

Ogden: Supply average; $4.40, 100-lb. drum.

San Francisco: Demand fair; supply good; $5 cwt.

Chicago: Demand fair; trend steady; supply ample; $3.25@3.50 cwt., carlots.

Boston: Demand slow; supply tight; 3¾¢ lb., nominal.

CALCITE CRYSTALS AND FLOUR

(All prices net, including freight)

New York: Crystals $15.28, flour $10.28.
Buffalo: Crystals $16.11, flour $11.11.
Toledo: Crystals $17.96, flour $12.96.
Boston: Crystals $16.53, flour $11.63.
Limecrest, N.J.: Crystals $10.50, flour $5.50.

CALCIUM CARBONATE

Cincinnati: Demand fair; trend steady; supply adequate; $8@9 cwt.

Los Angeles: Demand slow; trend unchanged; supply adequate; flour $10.15, 20-ton cars; meal $11.15, 20-ton cars.

Minneapolis: Fine grind, 50-lb. bags $12.25, 100-lb. bags $11.50; bulk, boxcar $10; bulk hopper $9.50; coarse grind $1 premium, delivered Minneapolis.

Chicago: Demand fair; trend steady; supply ample; fine grind, plain, 100-lb. bags $9.54; bulk, in hopper cars $7.54; bulk in boxcars $8.04; granular grind $1 premium.

Seattle: Demand and trend steady; supply good; $14, ex-warehouse, truck lots.

CHARCOAL

Los Angeles: Demand fair; trend unchanged; supply adequate; hardwood poultry $156 in less than ton lots; $144.40 in ton lots.

Chicago: Demand fair; trend steady; supply ample; in 50-lb. multiwalls $110.

San Francisco: Demand steady; supply ample; $141.

Boston: Demand and supply steady; $110.

COCONUT OIL MEAL

Portland: Demand slow; supply ample; trend unchanged; $68.

Los Angeles: Demand slow; trend unchanged; supply adequate; copra cake $75, bulk.

Seattle: Demand fair; trend firm; supply ample; $82, delivered truck (California).

San Francisco: Demand good; supply tight; solvent $69.

COD LIVER OIL (FORTIFIED)

New York: Demand and supply good; trend firm; price per lb. in 55-gal. drums (413 to 420 lb.): 300 ICU, 750 A 14½@15½¢, 1,500 A 18½@20¢, 2,250 A 18½@21¢, 3,000 A 21½@23¢; 500 ICU, 1,500 A 17½@19½¢, 2,250 A 20@22¢, 3,000 A 22@23¢; f.o.b. Massachusetts, New York or Pennsylvania.

Boston: Demand and supply steady; 600 D, 2,250 A 19¢ lb.; 600 D, 1,500 A 18¢; 300 D, 3,000 A 19½¢; 300 D, 2,250 A 18½¢; 300 D, 1,500 A 17¢.

CONDENSED FISH SOLUBLES

New Orleans: Demand light; trend easy; supply normal; $60@70, f.o.b. Gulf.

Denver: Demand fair; trend steady; supply ample; dried $167, Denver.

Los Angeles: Demand slow; trend unchanged; supply adequate; 4¢ lb.

New York: Demand fair; trend steady; supply tight; 3½@3¾¢ lb., f.o.b. eastern shore.

Boston: Demand and supply good; 4⅛¢ lb.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are sacked basis, bulk basis $6 less)

Minneapolis: Feed $46.90, meal $64.90.
Atlanta: Feed $52.98, meal $70.98.
Birmingham: Feed $51.64, meal $69.64.
Boston: Feed $51.84, meal $69.84.
Chicago: Feed $40, meal $58.
Cleveland: Feed $48.14, meal $66.14.
Denver: Feed $50.51, meal $68.51.
Ft. Worth: Feed $48.96, meal $66.96.
Indianapolis: Feed $45.36, meal $63.36.
Kansas City: Feed $40, meal $58.
Louisville: Feed $47.21, meal $65.21.
New Orleans: Feed $50.20, meal $68.20.
New York: Feed $52.43, meal $69.43.
Norfolk: Feed $50.71, meal $68.71.
Philadelphia: Feed $51.02, meal $69.02.
Pittsburgh: Feed $48.96, meal $66.96.
St. Louis: Feed $40, meal $53.
Decatur, Ill: Feed $33.75, meal $54.75.

CORN OIL MEAL

Louisville: Demand dull; supply light; trend unchanged; $49.45.

Cincinnati: Demand fair; trend steady; supply adequate; $46.50.

COTTONSEED OIL MEAL

New Orleans: Demand slow; supply adequate; trend steady; $78@79.

Los Angeles: Demand slow; trend steady; supply adequate; $72@73, bulk, nominal, awaiting new crop.

Portland: Demand slow; trend lower; supply ample; $77.

Memphis: Demand slow; trend easier; supply ample; prime 41% protein, old process $55; new process, 41% solvent $52.50.

Kansas City: Demand slow; trend steady to weaker; supply tight for immediate from Memphis as production is still light; old process meal $54.50@55, sacked, Memphis; solvent $52.50@53.50.

Denver: Demand fair; trend steady; supply ample; 2% fat $65.40, Denver.

Buffalo: Demand poor; trend steady; supply fair; $74, Boston.

Louisville: Demand fair; trend steady; supply good; old process $61; new process $60.

Philadelphia: Demand and supply fair; trend unsettled; $66.50.

Wichita: Demand fair; supply insufficient; 41% old process $69.

St. Louis: Demand good; trend lower; supply adequate; solvent $57.50.

Ft. Worth: Demand slow; supply sufficient; 41% old process $62; solvent, 1% fat added $59.35; pellets $1 additional; cottonseed hulls $17, sacked.

Ogden: Supply average; 41% $80@85.

Omaha: Demand easy; trend steady; supply ample; 41% solvent $57.20, bulk, delivered Omaha.

Cincinnati: Demand fair; trend steady; supply adequate; $62.

Chicago: Demand fair; trend steady; supply adequate; carlots, Memphis basis: hydraulic $55.50, solvent $53.50.

Seattle: Demand fair; trend easy; supply ample; $74, delivered truck (new crop, September delivery).

San Francisco: Demand good; supply tight; 41% $75; 44% $78.

Boston: Demand slow; supply light; $86.

CURACAO PHOSPHATE

New York: Trend steady; ground Curacao phosphate in 100-lb. bags $48, f.o.b. cars or trucks, New Orleans, Jacksonville, Fla., or Philadelphia.

D ACTIVATED ANIMAL STEROL (POWDERED)

Cincinnati: Demand fair; trend steady; supply ample; 1,500 ICU 11@12¢ lb.; 3,000 ICU 18¢ lb., warehouse.

Kansas City: Demand fair; trend steady; supply adequate; 1,500 ICU 9¾¢ lb.; 3,000 ICU 11½¢ lb.

New York: Demand and supply good; trend firm; price per lb. in 50- and 100-lb. bags, or 100-lb. drums: 1,500 ICU 8@12¢ bagged, 12@13¢ drums; 3,000 ICU 13@17¢ bagged, 17@18¢ drums; f.o.b. or delivered basis Pennsylvania, Delaware or New York.

D ACTIVATED PLANT STEROL (POWDERED)

Chicago: Demand fair; supply ample; 4,000,000 U.S.P. units per lb., 15¢ lb. in ton lots, less than ton lots 17¢ lb.; 12,000,000 units per lb., 5 tons to a carload 28¢ lb., ton lots and less 30¢ lb.

DEFLUORINATED PHOSPHATE

Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 35%, maximum fluorine .19% $71.50 net ton, f.o.b. Houston, 100-lb. multiwall paper bags, $68.50 in bulk.

Tupelo, Miss.: Minimum phosphorus 13%, minimum calcium 31%, maximum fluorine .12%, $51 net ton, f.o.b. Tupelo in 100-lb. multiwall bags, $48 in bulk.

Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum calcium 36%, maximum fluorine .18% $69.12 net ton, f.o.b. Wales in 100-lb. multiwall bags, $3 less in bulk.

Coronet, Fla.: Minimum phosphorus 18%, minimum calcium 31%, maximum calcium 34%, maximum fluorine .18%; carlots $63.50, truck load $64.25, net ton, f.o.b. Coronet in 100-lb. multiwall bags; $60.50 and $61.25 in bulk.

Cincinnati: 18% phosphorus $81; 13% phosphorus $64.98, f.o.b. Cincinnati.

DICALCIUM PHOSPHATE

Chicago: Stock food grade, 18.5% phosphorus, 20,000 lb. or more $83.25 net ton in 100-lb. papers, basis Chicago Heights, Ill., or Nashville, Tenn.; less than 20,000 lb. $93.25; 21% phosphorus, 20,000 lb. or more $94.50, basis Chicago Heights and Nashville; less than 20,000 lb. $104.50; bulk boxcars or hoppers $3 net ton less than bagged material.

Bonnie, Fla.: Minimum phosphorus 18½%, granular $83.25; freight equalized with closest producing point, carload basis.

Texas City, Texas: 18.5% minimum phosphorus, 21% minimum calcium, 24% maximum, granular $77.70 net ton, f.o.b. Texas City in 100-lb. multiwall bags; bulk, boxcars and hoppers, $3 net ton less than bagged materials.

Columbia, Tenn.: Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $83.25, f.o.b. Columbia, in 100-lb. multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.

Portland: Demand slow; supply ample; trend unchanged; $115.

Denver: Demand fair; trend steady; supply ample; $95.60, delivered in Denver.

Cincinnati: 18½% phosphorus $92@93.

DISTILLERS DRIED GRAINS

Buffalo: Demand fair; trend steady to lower; supply good; $52.50, bulk, Boston.

Louisville: Demand slow; trend easy; supply light; production light, most Kentucky plants down, should improve in late September; bourbon grains: light $47, dark $49, solubles $77.

Philadelphia: Demand slow; supply light; $57.50.

Cincinnati: Demand poor; trend steady; supply adequate; $49.50.

Seattle: Demand good; trend firm; supply limited; $68.50, delivered, truck lots.

San Francisco: Demand fair; supply ample; solubles $85.

Boston: Demand slow; supply adequate; light $55@56, dark $57@58.

DRIED BEET PULP

Buffalo: Demand fair; trend steady; supply adequate; $51, Boston.
Denver: Demand good; trend steady; supply adequate to meet commitments only; $49.23, delivered in Denver.
Ft. Worth: Demand slow; supply moderate; carlots, 50-lb. papers $49.20, October, November, December, delivered Ft. Worth.
Portland: Demand good; supply limited; trend unchanged; $56.40.
New Orleans: Demand fair; trend unchanged; supply adequate; $60@61.
Los Angeles: Demand and trend steady; supply ample; $47.80@48.60.
Ogden: Supply normal; $44@48.
Seattle: Demand good; trend firm; supply limited; $52, delivered, carlots.
San Francisco: Demand good; supply fair; $42.80, bulk.
Boston: Demand slow; supply spotty; new crop $51.

DRIED BUTTERMILK

Buffalo: Demand good; trend firmer; supply limited; $11.95 cwt.
Louisville: Demand slow; trend steady; supply ample; 11@11½¢ lb.
New Orleans: Demand fair; trend easy; supply normal; $11@11.50 cwt.
Los Angeles: Demand fair; trend unchanged; supply adequate; 11½¢ lb.
Ogden: Supply average; $8.50, 100-lb. bag.
Chicago: Demand slow; trend steady; supply ample; carlots, medium acid $10.60 @10.80 cwt.; sweet cream $11@11.25 cwt.
San Francisco: Demand fair; supply ample; 11½¢ lb.

DRIED CITRUS PULP

Buffalo: Demand fair to poor; trend steady; supply adequate; $35, f.o.b. Florida points.
Los Angeles: Demand and trend steady; supply adequate; orange pulp $41, bulk; lemon pulp $40, bulk.
New Orleans: Demand fair; trend easy; supply good; $35@40, f.o.b. Florida points.
San Francisco: Demand and supply fair; meal $49.
Boston: Demand fair; supply adequate; $35, f.o.b. Florida.

DRIED SKIM MILK

New Orleans: Demand dull; trend unchanged; supply ample; $11@11.50 cwt.
Los Angeles: Demand slow; trend unchanged; supply adequate; 14¢ lb. in less than ton lots; 13½¢ lb. in ton lots.
Buffalo: Demand fair; trend steady; supply ample; spray $10.65 cwt.
Louisville: Demand dull; trend firm; supply normal; 11@11½¢ lb.
Philadelphia: Demand slow; supply light; $12.50 cwt.
Ogden: Supply average; $15.15, 100-lb. drum.
Portland: Demand slow; supply ample; trend unchanged; 13¢ lb.
Cincinnati: Demand fair; trend steady; supply adequate; 10½@10¾¢ lb.
Minneapolis: Demand good; supply ample; $10.90@11 cwt.
Chicago: Demand fair; trend steady; supply ample; carlots $10.40@10.65 cwt.
San Francisco: Demand and supply fair; 13½¢ lb.
Boston: Demand good; supply light; 12¢ lb.

DRIED WHEY

Wichita: Demand light; supply ample; $6.50 cwt.
New Orleans: Demand good; trend easy; supply ample; $5.50@6 cwt.
Portland: Demand slow; supply ample; trend unchanged; $6.80 cwt.
Louisville: Demand dull; trend steady; supply normal; 6½¢ lb.
Philadelphia: Demand slow; supply fair; $6.50 cwt.
Denver: Demand fair; trend steady; supply ample; $6.50 cwt.
Kansas City: Demand fair; trend steady; supply adequate; regular and partially delactosed $5.50 cwt., producers' plants.
Los Angeles: Demand slow; trend unchanged; supply adequate; $6.10 cwt., carloads; $6.35 cwt., l.c.l.
Ft. Worth: Demand fair; supply adequate; carlots, standard $8, sacked, delivered Ft. Worth; $6.25, ton lots, f.o.b warehouse, Ft. Worth.
Ogden: Supply normal; $6.90, 100-lb. bag.
Cincinnati: Demand fair; trend steady; supply adequate; $6.15 cwt.
Minneapolis: Demand fair; supply ample; trend steady; 40 mesh $5.65 cwt., standard $5.50 cwt., producer's plant.
Chicago: Demand quiet; trend steady; supply ample; carlots $5.50 cwt.
Seattle: Demand and trend steady; supply good; $6.40 cwt., ex-warehouse, l.c.l.
San Francisco: Demand steady; supply good; $5.75 cwt.
Boston: Demand steady; supply fair; 5½¢ lb., f.o.b. shipping points.

FEATHER MEAL (HYDROLYZED)

Los Angeles: Demand fair; trend unchanged; supply adequate; $1 a unit of protein.
Ft. Worth: Demand fair; supply sufficient; 85% to 87% protein $82.50, f.o.b. trucks, north Texas plants.
Salisbury, Md.: Demand spotty; supply ample; $90, bulk, f.o.b.
Boston: Demand slow; supply scarce; $85, nominal.

FISH MEAL

Ft. Worth: Demand fair; supply light; 60% menhaden $139; 60% Angola $139, delivered Ft. Worth.
Ogden: Supply normal; $2.20 a unit, f.o.b. Coast; 65% $176@178.
Portland: Demand slow; supply ample; trend unchanged; $2.05 a unit.
Buffalo: Demand just fair; trend steady; supply ample; 60% protein, menhaden $140 bulk, $145 sacked.
Louisville: Demand dull; trend steady; supply light; $160, nominal.
New Orleans: Demand fair; trend steady; supply good; menhaden, 60% $126@130, scrap $122@126.
Los Angeles: Demand steady; trend unchanged; supply limited; local production, 60% protein $2.15 a unit.
Omaha: Demand and supply good; trend strong; 60% menhaden $145.
Cincinnati: Demand fair; trend steady; supply adequate; $160.
Minneapolis: Demand fair to good; supply adequate; trend steady; Gulf menhaden $146; 60% blended $152@160; 70% herring $3 a unit, f.o.b. West Coast.
Seattle: Demand and supply good; trend steady; $2.10 a unit of protein, ex-dock.
Chicago: Demand very slow; trend steady; supply ample; carlots, eastern menhaden $128 and scrap $124; Gulf menhaden $128 and scrap $124; redfish $130.
San Francisco: Demand slow; supply ample; $2 a unit of protein.
Boston: Demand and supply steady; $130, f.o.b. Gloucester.
Denver: Demand fair; trend steady; supply ample; $2.15 a unit of protein, f.o.b. West Coast.

HAY

Louisville: Demand slow; trend steady; supply good; No. 1 fancy hay and variety $25@30, No. 2 $2@3 less; straw, any variety $20.
Wichita: Demand good; supply sufficient; prairie $17.50, alfalfa, $15@20.
Denver: Demand and trend good; supply fair; $27@29 on new hay third cutting alfalfa baled.
Philadelphia: Demand slow; supply light; $25@26.
Los Angeles: Supplies limited; demand good for top quality; U.S. No. 1 $34@36; U.S. No. 2 leafy $32@33; U.S. No. 2 green $32@33; U.S. No. 3 $29@30.
Ft. Worth: Demand fair for alfalfa, practically nil for prairie and Johnson grass; supply sufficient; carlots, baled, No. 1 alfalfa $34@36, No. 2 $32@34; No. 3 prairie $24@26; No. 2 Johnson grass $22@24, delivered Texas common points.
Ogden: Supply average; third crop of hay now coming on in good shape; $1@1.25 a bale; $20 ton in the field.
Portland: Demand good; supply ample; trend unchanged; $34.
Cincinnati: Demand poor; trend steady; supply adequate; No. 1 timothy $24; No. 1 second cutting green alfalfa $28; mixed $24; wheat or oat straw $18@20.
Seattle: Demand good; trend firm; supply fair; U.S. No. 2 green alfalfa $34, delivered, truck lots.
Boston: Demand and supply seasonally steady; No. 1 timothy $41@44.

HOMINY FEED

Memphis: Demand poor; trend weak; supply ample; white $42, yellow $42.
Buffalo: Demand and supply fair; trend steady; $46, bulk, Boston.
Kansas City: Demand slow; trend steady to weaker; supply adequate; yellow $31@32, bulk, $1 less for white.
Louisville: Demand dull; trend steady; supply normal; $44.50.
New Orleans: Demand slow; supply adequate; trend steady; $44@45.
St. Louis: Demand slow; trend steady; supply ample; yellow $41.
Cincinnati: Demand fair; trend higher; supply adequate; $44.
Seattle: Demand fair; trend steady; supply good; $57, delivered, carlots.
Chicago: Demand good; trend steady to slightly higher; supply ample; $40.50@41, carlots.
Boston: Demand quiet; supply adequate; $46.50, bulk.

LINSEED OIL MEAL

Denver: Demand poor; trend firm; supply tight, small crop; $84.94, Denver.
Kansas City: Demand slow; trend steady; supply adequate for solvent, tight on old process, tightening up considered likely since flax is in such short supply; old process meal $73, bulk, Minneapolis; solvent $66.
Omaha: Demand easy; trend steady; supply light; 34% solvent $71.80, bulk; 32% old process $78.30, Omaha basis.
Ft. Worth: Demand increased; light offerings; 34% old process $93.50; solvent $86, truck.
Louisville: Demand slow; trend steady; supply light; old process $92.50; new process $85.50.
Portland: Demand slow; supply ample; trend unchanged; $87.
Philadelphia: Demand and supply fair; 34% $88.50.
Wichita: Demand fair; supply sufficient; 34% $82.50.
New Orleans: Demand slow; supply ample; trend steady; $84.50@85.
Los Angeles: Demand fair; trend steady; supply ample; local production, 31% protein $71, bulk.
Cincinnati: Demand poor; trend steady; supply adequate; new process $85; old process $91.
Minneapolis: Demand good; supply adequate; trend steady; new process $66 for September, $68 for October-December; old process $72.50 for September, $74.50 for October-December.
Seattle: Demand fair; trend steady; supply limited; 34% protein (Montana) $90, delivered, carloads.
Chicago: Demand fair; trend firm to higher; supply adequate; carlots, Minneapolis basis: solvent $66, expeller $72.50.
San Francisco: Demand fair; supply ample; $77.50.
Boston: Demand slow; supply very light; 34% $90.

LIVER & GLANDULAR MEAL

Omaha: Demand good; trend steady; supply light; 65% $210, Omaha basis.

MALT SPROUTS

New Orleans: Demand fair; trend steady; supply ample; $40@42.
Cincinnati: Demand fair; trend steady; supply adequate; No. 1 $42.
Chicago: Demand fair; trend steady; supply ample; carlots, No. 1 uneven bags $34; No. 1 bulk $29.
Boston: Demand and supply limited; $42.50.

MEAT AND BONE MEAL

St. Paul: Demand poor to fair; supply ample; trend steady; strikes in packing industry apparently having little effect on supply; demand still finding it hard to catch up with supply; $84@86.
Wichita: Demand good; supply insufficient; 50% $97.50, f.o.b. plant; 55%, no quotations, no offerings; above average price results from shortage of receipts at packing plants, coupled with a high demand.
New Orleans: Demand and trend easy; supply ample; $86.50@88.
Portland: Demand slow; trend lower; supply ample; $1.40 a unit.
Louisville: Demand dull; trend steady; supply good; $80@85.
St. Louis: Demand fair; trend steady; supply adequate; $83.
Kansas City: Demand fairly good as mixers buy against possible work stoppage because of strike; trend steady; supply fairly tight for nearby; 50% meat and bone $82.50.
Denver: Demand normal; trend steady; supply ample; 50% $77.50, bagged, truck lots; $74.50, bulk lots.
Buffalo: Demand fair; trend lower; supply ample; 50% meat scraps $77.50 bulk, $82.50 sacked.
Ft. Worth: Demand fair; supplies rather limited; meat and bone, 50% $79.50, f.o.b. or delivered Ft. Worth.
Ogden: Supply average; $87 ton in 100-lb. bags.
Los Angeles: Demand better; trend unchanged; supply tighter; 50% protein $1.80 a unit, bulk.
Omaha: Demand and trend firm; supply good; $82.50.
Cincinnati: Demand good; trend streng; supply fair; 50% meat and bone scraps $80, Cincinnati.
Chicago: Demand fair; trend steady; supply adequate; carlots, 100-lb. bags, 50% protein $87.50.
Seattle: Demand good; trend weak; supply ample; 50% protein $80, ex-warehouse.
New York: Demand and supply fair; trend upward; 50% $67.50, 55% $75, bulk; 50% $70.50, 55% $78, sacked.
San Francisco: Demand fair; supply ample; $1.50 a unit of protein in bulk.
Boston: Demand and supply steady; $1.15 a protein unit; converted 50% $70.

MILLFEED

Minneapolis: Demand fair to good; supply adequate; trend steady; middlings $30 @31.50; bran $31.50@32.50; red dog $46.
Kansas City: Demand slow, although there has been good interest in October-November-December middlings at $30@31; trend steady; supply ample with mills running well; bran $29@29.75, shorts $34.50 @35.25, sacked; bran $24.50@25.25, shorts $29@29.75, middlings $25.50@26.50, bulk.
Wichita: Demand fairly good; supply sufficient; basis Kansas City: bran $29.25@29.75, shorts $34.25@34.75; bran declined $1.50 and shorts 50¢, compared with the preceding week.
Ft. Worth: Demand good; supply sufficient; carlots, burlaps, bran $37.50, gray shorts $44@46, bulk middlings $36.50, delivered Texas common points; $1 lower on bran, about unchanged on shorts, $2 lower on middlings compared with previous week.
Chicago: During the week ending Sept. 9, there was no appreciable broadening in de-

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mand for the millfeed list. Prices have been scaled down on red dog and to a moderate degree on standard middlings, while standard bran showed little if any price adjustment. Offerings have not been pressing enough to bring about any material weakening in the price structure except on red dog, off about $3 ton for the week. Bran is down about 50¢ ton. Quotations: standard bran, ton, cariots, $37 sacked, $29.50 bulk; standard midds. $36.50 sacked, $30.50 bulk; red dog $48@50 sacked, $44@45.50 bulk.

St. Louis: Sacked, bran $34.50@35, shorts $40@40.50; bulk, bran $29.50@30, shorts $34@34.50, middlings $30.50@31.

Cincinnati: Demand fair; trend steady; supply adequate; bran $40, middlings $42.

Omaha: Demand easy; trend steady; supply ample; sacked bran $30.50; sacked gray shorts $36; bulk standard midds. $27.50, all Omaha basis.

Boston: Demand cautious; supply spotty; bran $45.40, middlings $46.50.

Buffalo: Lack of demand forced millfeed prices lower despite holiday-shortened flour mill running time. Mixers' business was down and buyers weren't interested beyond spot needs. The sacked differential on bran and middlings held unchanged at $1. Bran and middlings, sacked and bulk, ended the week 50¢@$1 lower. Red dog eased 50¢. Quotations Sept. 9: bulk bran $30.50@31, sacked $35.50@36; bulk middlings $32@35.50, sacked $37@37.50; bulk red dog $45.50@46.50, sacked $49@51.

New York: Demand fair; trend steady; supply good; bran $44@44.50, standard midds. $45.50@46.

San Francisco: Demand good; supply tight; millfeed $48.50, rice bran $49.

Philadelphia: Demand spotty; trend unchanged; supply ample; bran $44; standard midds. $46, red dog $62.

New Orleans: Demand fair; trend steady; supply ample; sacked, bran $41.50@42.25, shorts $46.50@47.25; bulk, bran $36.75@37.50, shorts $41.50@42.25, middlings $37.75@38.50.

Louisville: Demand fair; trend easy; supply ample; bran $41.10, mixed feed $43.60, shorts $46.10, middlings $43.30.

Memphis: Demand fair; trend weak; supply ample; wheat bran $37.30, sacked; gray shorts $42.80, sacked; standard midds. $33.30, bulk.

Seattle: Demand fair; trend easy; supply limited; $46, delivered common transit points, cariots.

Portland: Demand slow; trend lower; supply ample; $42.

Ogden: Supply average; to Utah and Idaho: red bran and mill run $40, middlings $46; to Denver: red bran and mill run $42, middlings $47; to California: red bran and mill run $47.50, middlings $52.50, f.o.b. San Francisco and Los Angeles.

Denver: Demand more active; more interest; supply ample; shorts $38.25; bran $32.75; mill run $35.50.

Los Angeles: Standard mill run $44.50@45.50, bulk, fair demand, easier trend, moderate offerings.

MINERAL FEED

Portland: Demand slow; supply ample; trend unchanged; $45.

Wichita: Demand good; supply sufficient; all-purpose with iodine, 50-lb. blocks $97.50, 100-lb. bags $92.50, f.o.b. plant.

Denver: Demand fair; trend steady; supply ample; $155.

Ft. Worth: Demand good; supply sufficient; all-purpose granules $90, block $97; mineral phosphorus 6% granules $106, block $113; cattle-sheep mineral 7% phosphorus granules $100, block $107; hog mineral phosphorus 2½% granules $97, phosphorus 2% $77 (all in 50-lb. paper bags).

Ogden: Supply normal; $113 ton in 50-lb. blocks; $103 ton, granular, 50-lb. bags.

Sioux City: 50-lb. mineral blocks 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

Seattle: Demand fair; trend steady; supply good; mixer mineral $48, ex-warehouse; all-purpose mineral $85, ex-warehouse.

San Francisco: Demand steady; supply good; all-purpose with iodine $70.

MOLASSES

Louisville: Demand slow; trend steady; supply light; 10½¢ gal., tank car lots, f.o.b. Gulf ports.

New Orleans: Demand good; supply ample; 10½¢ gal., tank cars and trucks; 600-lb. customers' drums $8.10.

St. Louis: Demand slow; trend lower; supply ample; 10¼¢ gal., New Orleans.

Minneapolis: Demand poor to fair; supply adequate; trend steady; $30.50, tank trucks, delivered.

Memphis: Demand poor; trend weak; supply ample; blackstrap 10¼@10½¢ gal., tank car, f.o.b. New Orleans, and $25 ton, delivered Memphis, truck.

Denver: Demand fair; trend steady; supply ample; 10¼¢ gal., New Orleans; $17.53 ton, New Orleans; $20 ton, West Coast.

Buffalo: Demand fair; trend steady; supply good; 16½¢ gal., f.o.b. Albany.

Kansas City: Demand slow; trend steady; supply ample; 10@10¼¢ gal., tank car, New Orleans, for nearby and 10½¢ gal. for through December.

Los Angeles: Demand good; trend unchanged; supply adequate; $21, bulk, f.o.b. tank cars; $21.25, bulk, f.o.b. tank trucks.

Ft. Worth: Demand slow; supply sufficient; blackstrap 11½¢ gal., f.o.b. Houston; delivered Ft. Worth truck $26.36, seller's market price on date of shipment.

Cincinnati: Demand fair; trend steady; supply adequate; 10½¢ gal., New Orleans.

New York: Demand fair; trend steady; supply good; blackstrap 16¢ gal., tank cars, tank wagons, f.o.b. New York.

San Francisco: Demand and supply good; $20, f.o.b. cars, Richmond, Cal.

Seattle: Demand fair; trend easy; supply good; $21.50, f.o.b. Seattle, tank car lots or truck lots.

Boston: Demand steady; supply plentiful; 16½¢ gal. in tank cars.

NIACIN

New York: Trend steady; $4 kilo, 10-kilo lots; $6.20 kilo, 5- and 2½-kilo lots; $6.30 kilo, 1-kilo lots; freight prepaid or paid to destination.

OAT PRODUCTS

Ft. Worth: Demand fair; supply sufficient; 10% protein oat millfeed $39.50@40.50; reground $25@26, September.

Louisville: Demand slow; trend fairly steady; supply ample; reground $23.10, rolled oats $34.30; feeding oatmeal $77.30; pulverized white $52.80; crimped white oats $69.30.

Philadelphia: Pulverized white demand slow, supply fair $53; domestic demand slow, supply light $27; Canadian oat feed demand slow, supply light $28.50.

Los Angeles: Demand slow; trend firm; supply tight; local production, pulverized $63.

Memphis: Demand poor; trend weak; supply ample; 3½% protein, reground oat feed $20.75.

Portland: Demand slow; supply ample; trend unchanged; rolled $65, ground $62, cleaned $64.

Minneapolis: Demand poor; supply ample; slight reduction in pulverized price, others same as last week; feeding rolled oats $30, feeding oatmeal $68.50, standard pulverized $45.50, crimped $59, reground oat feed $23.

Cincinnati: Demand poor; trend steady; supply adequate; reground oats $28; pulverized white oats $51; rolled oats $31.

Seattle: Demand and supply fair; trend firm; $50, bulk, delivered truck lots (new crop).

Chicago: Demand steady; supply ample; trend unchanged; cariots, reground oat feed $15.50; No. 1 fine ground feeding oatmeal $30; feeding rolled oats $77@81.

Boston: Demand and supply fair; white pulverized $57; reground oat feed $26.

OYSTER SHELL

Portland: Demand good; supply ample; trend unchanged; western $34; eastern $39; granite grits $26; shell flour $24.

Los Angeles: Demand fair; trend unchanged; supply adequate; $14.80.

Louisville: Demand good; trend steady; supply normal; 80-lb. paper bags $23.45; 50-lb. paper bags $23.70; 25-lb. paper bags $25.95.

New Orleans: Demand and supply good; trend steady; $24@25.

Cincinnati: Demand fair; trend steady; supply adequate; $24.45.

Seattle: Demand and trend steady; supply good; eastern $36, delivered cariots.

San Francisco: Demand fair; supply ample; local $15, eastern $26.

Boston: Demand and supply steady; in paper $26.02.

PEAT MOSS

Philadelphia: Demand slow; supply good; $2.80 a bale, f.o.b. pier.

Los Angeles: Demand fair; trend unchanged; supply adequate; Canadian 6.1 cu. ft. bales $3.75.

Portland: Demand slow; supply ample; trend unchanged; $3.30 a bale.

Seattle: Demand and supply good; trend firm; $2.80 a bale, delivered truck lots.

Chicago: Demand fair; trend steady; supply adequate; standard 7½ cu. ft. bales $3.80.

San Francisco: Demand and supply fair; $3.65 a bale.

Boston: Demand and supply steady; $3.15 a bale.

POTASSIUM IODIDE, U.S.P.

Cincinnati: Demand good; trend steady; 90% KI in calcium stearate or carbonate mixtures: 250-lb. drums $1.35; 200 lb. in 100-lb. drums $1.35; 100-lb. drums $1.38; 25-lb. drums $1.41, f.o.b. Cincinnati.

POULTRY BY-PRODUCTS

Los Angeles: Demand fair; trend unchanged; supply adequate; $1.45 a unit of protein.

Ft. Worth: Demand excellent; supply very limited; 55% protein $85, f.o.b. north Texas plants.

Salisbury, Md.: Demand good; supply limited; $93, f.o.b. bulk.

Boston: Demand slow; supply improved; $82.

RIBOFLAVIN

Cincinnati: Trend steady; feed grade (in feed supplements) 4¢ gram in less than ton lots in 3.36 to 18 gm./lb. mixtures, 3¢ in ton lots or more; freight prepaid or paid to destination.

New York: Trend steady; feed grade (in feed supplements) 4½¢ gm. in 3.36 to 18 gm./lb. mixtures; freight prepaid or paid to destination.

RICE BY-PRODUCTS

Los Angeles: Demand slow; trend unchanged; supply tight; California production, high fat content, bran $53.

Ft. Worth: Demand slow; offerings light; cariots, rice bran $33@34, f.o.b. south Texas rice mills; hulls $3.50, f.o.b. mills.

San Francisco: Demand good; supply ample; bran $45; polished $49.

SCREENINGS

Buffalo: Demand and supply fair; trend steady to higher; ground, sacked $34, New York, lake and rail; unground, bulk $29.25, New York.

Ft. Worth: Demand good; supply extremely limited; ground mixed grain $28.

Minneapolis: Supply still short; demand sightly stronger than last week; Canadian $20, immediate; flax screenings $40, basis 15% lights $4@10, mediums $11@20, heavies $21@35.

Cincinnati: Demand fair; trend steady; supply adequate; ground grain screenings $35.

Chicago: Demand quiet; trend lower; supply adequate; cariots, ground grain screenings $30, Canadian $23.40.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

Atlanta: $20.40@20.67.
Buffalo: $25.31@25.45.
Chicago: $24.77@24.90.
Cincinnati: $23.47@23.60.
Des Moines: $25.23@25.35.
Kansas City: $24.85@25.
Memphis: $22.20@22.47.
Minneapolis: $25.92@26.06.
Philadelphia: $24.32@24.95.
St. Louis: $24.14@24.27.

SORGHUMS

Los Angeles: Demand steady; supply ample; trend unchanged; milo $2.12½ cwt., bulk.

Ft. Worth: Demand fair; supply sufficient; south plains harvest now getting under way; cariots, bulk, No. 2 yellow milo $1.94@1.96, delivered Texas common points.

SOYBEAN OIL MEAL

Denver: Demand fair; trend steady; supply ample; $69.64, Denver.

Kansas City: Demand very slow; trend weaker; supply ample; meal for Kansas City $49@49.50, bulk, Decatur; unrestricted $52.

Ft. Worth: Demand fair; supply sufficient; cariots, 44%, September $69.40; 50% protein, September $75@76.50; truck, 44% $69.50, sacked.

Wichita: Demand fair; supply about offsets demand; 44% $64, 50% $71, f.o.b. plant.

Philadelphia: Demand and supply fair; 44% $50, bulk, Decatur.

Louisville: Demand slow; trend strong; supply normal; $65.20.

New Orleans: Demand slow; supply ample; trend steady; $62@62.50.

Omaha: Demand poor; trend easy; supply ample; 44% $56.10, bulk, delivered Omaha.

Ogden: Supply average; $54@59.

Los Angeles: Demand slow; trend weaker; supply ample; $73.90@74.40, bulk.

Portland: Demand slow; trend lower; supply ample; $49, f.o.b. Decatur.

Memphis: Demand poor; trend easy; supply ample; prime 44% solvent $59.50, sacked, f.o.b. Memphis.

St. Louis: Demand fair; trend firm; supply ample; 44% $61.

Minneapolis: Demand fair to good; supply ample; trend steady to weaker; $45@45.50, bulk, Decatur.

Seattle: Demand fair; trend easy; supply ample; $78, delivered, cariots.

Chicago: Soybean oil meal refused to follow the pattern laid down in the millfeed market during the week ending Sept. 9. For the most part, the high protein commodity was edging upward with no appreciable pressure of offerings noted. While soybean oil futures were making some new lows for the season, the other product was inclined to show firmness in the futures markets. September meal futures closed Sept. 9 at a premium of about $1.25@1.50 over the October delivery. Quotations, Decatur basis, cariots: 44% protein, unrestricted billing $52 and eastern restricted billing $49@49.50; 50% protein, unrestricted billing $57.50@58 and eastern restricted $53.50.

Boston: Demand slow; supply ample; 44% $49.50, 50% $54, both bulk, f.o.b. Decatur.

San Francisco: Demand good; supply ample; $79.40.

TANKAGE

Kansas City: Demand good as mixers continue to protect against possible labor troubles in industry; trend steady; supply tight for nearby; 60% digester $80.

Wichita: Demand good; supply insufficient; 60% $92.50, f.o.b. plant.

New Orleans: Demand fair; trend steady; supply light; $94@95.

Cincinnati: Demand fair; trend steady; supply ample; 60% digester $82.50, Cincinnati.

Louisville: Demand slow; trend firm; supply good; $85@90.

St. Paul: Demand poor to fair; supply ample; trend steady; cut in production because of packinghouse union strike against Swift & Co. apparently not enough to bring about any price change; supply reduction making only small dent in stocks; demand finding it hard to catch up with production; $84@86.

St. Louis: Demand fair; trend steady; supply adequate; $83.

Ft. Worth: Demand fair; supply short; 60% digester $80, Ft. Worth.

Omaha: Demand and trend firm; supply good; $82.50.

Chicago: Demand fair; trend steady; supply ample; cariots, 60% protein, 100-lb. bags $87.50.

VEGETABLE AND ANIMAL FAT (HYDROLYZED)

Ft. Worth: Demand excellent; offerings limited; 5¾¢ lb., f.o.b. north Texas area.

VITAMIN E FEED SUPPLEMENT

Cincinnati: Demand good; trend steady; any quantity in 100-lb. drums $1.50; in 25-lb. drums $1.55; freight allowed to destination.

New York: Demand and supply good; trend steady; 100-lb. drums $1.50 lb., 25-lb. drums $1.55 lb., f.o.b. manufacturing plants, freight allowed and goods insured to destination.

Rochester, N.Y.: Demand and supply good; trend steady; 100-lb. drums $1.50 lb., 25-lb. drums $1.55 lb., f.o.b. manufacturing plants, freight allowed and goods insured to destination.

WHEAT GERM MEAL

Buffalo: Demand fair; trend steady to higher; supply fair to poor; commercial grade $58, f.o.b. Buffalo.

New Orleans: Demand and supply fair; trend steady; $64@66.

Minneapolis: Demand fair; supply adequate; $56.

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CENTENNIAL

(Continued from page 1)

"The Centennial and Crown management takes this opportunity to express its appreciation to the many loyal and friendly dealers, feeders and farmers who have supported Centennial and Crown feeds over the years," Moritz Milburn, president, said in making the announcement.

"Arrangements have been made for a continuous supply of similar feeds for their customers by an important feed milling company.

"The decision to discontinue the Portland Feed division was reached in order that greater effort could be directed to the company's principal interest — flour milling. Centennial Mills is one of the largest flour milling companies in the Pacific Northwest with wide distribution outlets in both the domestic and export markets."

All Crown feed accounts have been turned over to Albers Milling Co., and Crown field men are now on the Albers staff. It is understood that Albers will buy feed manufacturing equipment from the Portland Crown plant.

CORNELL PROGRAM

(Continued from page 8)

Factors in Rumen Development," Dr. R. G. Warner.

Cornell presentations Nov. 13 will include: "The Relationship Between Selenium, Muscular Dystrophy and Other Factors in Animal Nutrition," Dr. D. E. Hogue, J. F. Practor and D. C. Maplesden; "Mineral Requirements of Young Swine," Dr. W. G. Pond; "Growth Stimulating Effect of Soybean Oil and Other Fractions of Soybeans," Dr. L. B. Carew, Jr., Dr. F. W. Hill, D. T. Hopkins and Ruth Renner; "The Application of Tranquilizers in Animal Feeding," Dr. A. Van Tienhoven.

"The Place of Feed Additives in Ruminant Rations," Dr. Loosli; "The Possible Use of Systemic Insecticides as Feed Additives," Dr. J. G. Matthysse; "Some Practical Aspects of the Sense of Taste in Domestic Animals," Dr. M. R. Kare; "Impact of Current Public Opinion on the Use of Foods," Dr. C. M. McCay; "Glycine in Poultry Nutrition," Dr. M. C. Nesheim; "The Role of Choline and Zinc in Bone Formation of the Chick," Dr. L. J. Daniel, Dr. L. C. Norris and Dr. R. M. Leach, Jr.; "Grain Recommendations for Dairy Cows Calculated by Electronic Computers," Dr. S. T. Slack and Prof. J. D. Burke.

The conference program will close the afternoon of Nov. 13 with a question and answer period presided over by Dr. S. E. Smith.

Chairman of the program committee is Dr. M. L. Scott, Cornell poultry department, and vice chairman is Dr. H. H. Williams, head, biochemistry and nutrition department.

FIRM INCORPORATES

DOVER, DEL.—Schaper Feed & Hatchery Co. filed a charter of incorporation here recently with authorized capital stock of the firm at $75,000. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

CURBS ON SWINE

(Continued from page 1)

known officially at not more than 533 million bushels—the producers will hold beans at the farm level to the extent that they are the price making factor for this crop. The major intangible in this observation is "Which end product will have to carry the load of the soybean price?"

USDA officials question where ideas can be obtained that soybean prices will rise.

Exports and Crush

One answer is that the USDA Foreign Agricultural Service is forecasting an export of 125 million bushels of beans this coming crop year. Also, according to the official USDA fats and oils report, the forecast is for a crush of not less than 425 million bushels of beans. All of which makes a total of 550 million bushels.

Also to be considered are farm reserves for feed and seed, plus farm re-seal of old crop beans at higher than new price support levels, at farm storage earnings of 16¢ bu.

It might casually appear that if farmers exhibit their normal dispositions, they can hold beans to make a soybean market in late winter substantially higher than futures markets now indicate. This observation is based on statements from USDA officials that they will not sell old crop beans during harvest this year.

In its sales of soybeans or other oilseeds, USDA is not required to price the commitments on the basis of current price support plus carrying charges; it may sell at any price it decides.

One USDA official told this reporter that a view of higher late winter soybean prices did not reflect the fact that in the new crop year cottonseed will be supported at about $5 ton less than last year.

At the same time, a substantial USDA observer says that some of the foregoing conclusions in this report will be discontinued if bean prices rise. He says that as beans go up, the crushing operations will decline and exports will fall off.

Surpluses

In legislation now waiting final action, there is a proposal making edible surplus-declared fats and lards available first for domestic relief distribution, if they are to be made available for export under Public Law 480.

Already USDA has lard on the surplus commodity list, and it is obvious to all that the big vegetable oils—cottonseed and soy—plus linseed oil are also on this list.

Many sources are now telling this reporter that unless something is done for oil this year, by Oct. 1, 1960, there will be on hand the equivalent of nearly 500 million pounds more of edible oils, including lard, than on Oct. 1, 1959. These sources are those primarily interested in the processing of end products.

Nevertheless, some solution may be found to the problem facing USDA.

The agency wants to discourage swine expansion. As one official put it, price controls over materials will be an effective birth control on swine next spring. At that point, USDA may enter price supporting programs and then let prices seek their own level.

While the soybean crop failed to reflect the earlier USDA outlook or the professional market analyst outlook, the corn crop gets larger by the week. The estimate is now into the 4.4 billion bushel level.

If farmers hold soybeans effectively as they have in the past, and looking at official USDA disappearance views for crush and export, the question is what will be the disposition of swine farmers to pay high prices for soybean meal relatively as compared with corn in their local storage.

In this connection, another USDA official predicted that this winter the price of corn at the farm level will be 85¢ bu.

Meanwhile, the situation is this: USDA wants to discourage swine production. They can do it most effectively, it is felt, through higher meal prices. They want to use that device. Perhaps the answer is that they can defer any oil donation program until late winter when they have slowed breeding of swine, and then put into effect a pork buying program which can be stimulated by an oil donation program with emphasis on oilseed end products from oilseed meal to edible oils.

Casually, it is interesting to note that one official told this reporter the cottonseed price support program for the coming year will be $5 ton cheaper than last year. That was undoubtedly a rough off-the-cuff statement, but it would indicate that for the new crop there will be a cottonseed support program.

PET FOOD

(Continued from page 1)

total of 17 million) own 23,800,000 dogs, or 1.4 dogs per owning family.

This compares with the 24% of the families who own cats, and the 17% who own birds. He went on to say that cats outnumber dogs, 25.5 million to 23.8 million. He set the bird population at 12.2 million.

"An owner of a cat, therefore," he said, "is much more likely to have another one around than a dog or bird owner. In fact, the average comes out to 2.1 cats per cat-owning family."

Mr. Crawford continued by saying that 25% of the cat owners own three or more cats, 20% own two cats and 55% own one cat.

Other information he presented included the following:

1. The highest percentage of dog-owning families is among persons with grade school and high school education, in farm areas, and among single-dwelling owners.

2. The farm ratio of ownership to dog food usership, however, is the lowest of all groups. The bigger the city, the lower the percentage of dog owners, but the highest percentage of users.

3. In all, more than 90% of dog food owners buy canned food in the course of a year, and 80% of them buy dry dog food. About two thirds of dog food buyers are in the market during the first quarter, indicating a high frequency of purchase.

4. The total dog food market continues to grow, and dry dog food continues to become more important.

5. In dealing, as in all techniques of marketing, selectivity is the key consideration.

6. The isolation of dog food buyers in terms of number of customers reached, frequency of purchase, size of purchase, type of product bought and the number of different brands purchased, are important ways to better zero in on the market.

A large potential market exists for premium-priced supplemental canned cat foods, the American Can Co. reported at the pet food convention.

J. H. Sunley, director of market research for the company's Canco marketing division, told the institute of results of the "Canco Cat Taste Panel," a study encompassing actual cat taste tests of canned food and interviews with cat owners on the West Coast.

Two supplemental canned foods were tested, all-tuna red meat and an all-mackerel product. The former already is on the market in limited distribution and the latter has been suggested as having market potential, Mr. Sunley said.

The study indicated that normal foods, largely canned fish- or meat-base formulations, were used for 70% of all feedings. Thus the market potential for new commercial supplemental foods is found primarily in the remaining 30% of feedings, Mr. Sunley said.

MEMO ON STORAGE

(Continued from page 1)

are as displeased as taxpayers at the expanding need for such services. Grain firms are vigorous advocates of free, competitive markets, the letter points out, and the solution for the taxpayer lies in eliminating the surpluses by a return to a free, competitive agriculture.

Blame for the accumulation of these surpluses must rest with those politicians of both parties who seek farm votes by continuing to back an unworkable program, the elevator association letter declares.

Facts Pointed Out

Among the facts on grain storage pointed out to the editors by the memorandum are the following:

- It asks the questions, "Is 45/1,000 of a cent a reasonable charge for a day of storage and safe-keeping of a bushel of government-owned surplus corn?
- "Is from 43/1,000 to 49/1,000—depending on geographical area—reasonable for wheat?
- "Is $1.3 million daily—to become nearly $1.6 million following this year's takeover of defaulted 1958 crop loans—a reasonable total for storage of the nation's ever-growing grain surplus?"

In answer, the memorandum notes that U.S. Department of Agriculture and Commodity Credit Corp. say the charges are reasonable. Members of the nation's grain trade, operating some 11,000 commercial elevators for merchandising of free-market grain and storage of roughly half the surplus stockpile, say the charges are not only reasonable, but, in most cases, lower than rates paid by the general public. They have increased more slowly than costs and charges in the economy as a whole, and provide the government with "fringe" benefits far in excess of the basic storage function.

Spokesmen for the grain trade, the statement continues, point out that most grain companies do not approve of the crop support program that has resulted in the present surpluses but are, instead, vigorous advocates of competitive, free-market agriculture. They note that a harvest moving through their facilities to domestic and foreign buyers not only has more profit potential than the same crop in storage, but requires in the handling far less investment in buildings, equipment and labor.

Nevertheless, the surpluses must either be stored or destroyed. Through four governmental administrations, the rental of approved elevator storage from commercial firms constantly has been preferred by government to full-scale construction of its own storage and training of its own personnel. One reason for this preference, as recently expressed by an official of CCC, is the unchallenged ability of the trades' merchandising organizations to preserve grain quality through mixing and merchandising.

Other reasons, some based solely on comparative costs and some on broader economic considerations, the report continues, are:

1. Complete responsibility for grain stored in commercial elevators is assumed by warehousemen, with CCC guaranteed payment for any loss in quantity or quality of grade.

2. Economic "machinery" of the trade is essential to operation of any farm program involving supported crop prices or physical takeover, regardless of whether storage facilities are privately or governmentally owned.

3. Commercial terminals and most country elevators contain equipment for cooling, turning, cleaning, aerating, fumigating and otherwise maintaining condition far too costly to be installed in government units.

4. Short-term financial risk of maintaining non-revenue-producing empty space is carried by commercial firms rather than by the government.

5. Long-term capital risk—based on each year's likelihood that poor growing conditions, effective production controls, stepped-up export programs or other circumstances may result in reduction or elimination of surpluses—is borne by the grain trade.

6. Existence of an experienced and operating commercial grain trade, sufficiently large and well-manned to handle all U.S. grain production, is essential if government ownership of surpluses ever is to end and agricultural marketing ever to be returned to normal channels.

CCC operates under explicit directions by Congress that the "facilities of the trade be utilized to the fullest extent practicable." CCC found it necessary to build government-owned storage at certain times. However, in the last two years, no CCC additions have been necessary. The grain trade, in contrast, now operates storage capacity of some 4.5 billion bushels, with 80% of the total approved for storage of government stocks. Private construction now under way and applications before CCC promise to raise totals approved under the Uniform Grain Storage Agreement to 4 billion bushels before the end of this year, the memorandum states.

Grain storage rates now being paid under UGSA were last adjusted in 1956. Trade spokesmen point out that these, in their opinion, are lower than warranted for the services rendered, and are fast becoming so low—relative to operating and construction costs—as to inhibit building in the future that almost certainly will be needed.

The report continued—a CCC official, in an interview, said of the trade's claim that 1956 storage rates are no longer adequate—"It's possible they may make a good case for higher rates. Their costs have gone up in the last three years like everybody elses."

Grain men point out that, while the total storage charges for surplus grain are large, this total would be much larger if, in past years, rates had followed the upward course of elevator wages, elevator construction, over-all national costs of building or any of half-a-dozen other accepted cost indices.

DR. CHYATTE PROMOTED

CHICAGO—DePaul University has announced the promotion of Dr. Conrad Chyatte to associate professor of psychology. Dr. Chyatte will continue his association as director of research with Jordan, Sieber & Corbett, Inc., Chicago and New York pharmaceutical, medical and veterinary advertising agency.

WORST BROILER YEAR EVER

RALEIGH, N.C.—Recently released figures indicated 1959 promises to be the poorest year, pricewise, North Carolina commercial broiler growers have ever experienced. The market news service of the North Carolina Department of Agriculture cited figures showing that prices during the first eight months of the year averaged 15.82¢ lb.

This is 3.36¢ under the average during the same period last year and 10.52¢ under the 1955 January-August average.

Curtis Tarleton, in charge of the market news service, said, "Prices have been playing around the cost of production for several months, averaging below it in many instances and going only slightly above it at other times."

Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penn.	Ind.	Ill.	Mo.	Del.	Md.
July 4	1,186	620	814	778	99	818	1,722	2,001
July 11	1,222	551	719	854	109	754	1,778	1,894
July 18	1,202	607	833	625	129	908	1,591	2,055
July 25	1,212	629	690	878	108	865	1,625	2,001
August 1	1,160	614	718	797	111	845	1,550	1,898
August 8	1,163	470	673	736	130	857	1,573	2,033
August 15	1,054	485	757	791	103	815	1,742	1,782
August 22	980	420	859	767	138	805	1,607	1,967
August 29	1,048	469	714	710	100	768	1,569	1,934
September 5	1,061	427	774	694	156	724	1,326	1,871

Week ending	Va.	W. Va.	N.C.	S.C.	Ga.	Fla.	Ala.	Miss.
July 4	1,866	821	2,981	327	4,776	225	3,406	2,464
July 11	993	850	2,919	351	4,673	172	3,394	2,370
July 18	1,117	565	2,930	366	4,554	160	3,363	2,292
July 25	1,272	515	2,764	354	4,298	187	3,295	2,214
Aug. 1	1,026	484	2,576	331	4,033	144	3,177	2,132
Aug. 8	1,116	445	2,551	348	5,807	158	3,098	2,045
Aug. 15	1,009	528	2,660	292	5,730	177	2,973	2,169
Aug. 22	1,060	463	2,581	272	5,370	205	3,019	2,035
Aug. 29	1,001	486	2,396	303	5,331	170	3,034	1,780
September 5	984	467	2,405	263	4,812	213	2,906	1,664

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1959	1958
July 4	3,589	449	2,258	332	243	1,015	33,673	35,436
July 11	3,525	386	2,301	306	238	1,021	32,977	34,912
July 18	3,483	367	2,157	351	207	945	33,007	33,846
July 25	3,597	423	2,142	303	237	1,017	32,626	33,370
Aug. 1	3,358	379	2,250	287	213	913	30,996	32,440
Aug. 8	3,287	374	2,014	335	165	959	30,354	32,003
Aug. 15	3,077	413	2,073	340	186	878	30,082	31,232
Aug. 22	3,024	366	2,028	292	161	888	29,307	30,025
Aug. 29	2,869	391	1,975	277	200	800	28,325	28,883
September 5	2,769	366	1,870	317	121	839	26,939	28,117

MISSOURI

(Continued from page 6)

study on the influence of hormones on rate and efficiency of gain, and on carcass composition of barrows.

One group of barrows received 6 mg. of stilbestrol. A second group got 166.7 mg. of progesterone and 3.3 mg. of estradiol benzoate. A third group received 400 mg. of progesterone and 10 mg. estradiol benzoate. A control group received no hormones.

All hormones were given as ear implants when hogs averaged about 100 lb. Hogs were slaughtered when they reached 205 lb.

Results showed little difference in average daily gain and efficiency of gain. There was some indication the stilbestrol and the higher level of progesterone-estradiol may have slightly decreased rate of gain.

Both progesterone-estradiol treatments made small but significant reductions in backfat. The high and the low level treatments probed 1.36 in. and 1.40 in., respectively. The no-treatment group probed 1.54 inches of backfat.

The stilbestrol treatment had less effect, Mr. Day said.

Carcass figures indicated the high level progesterone-estradiol treatment increased yield of lean cuts 1.7%. Carcasses receiving this treatment also had the largest loin eye areas.

Barrows implanted with stilbestrol and the lower level of progesterone-estradiol produced carcasses only slightly different from the no-hormone carcasses. However, the differences were consistent. Mr. Day said this suggests these two treatments also made a slight improvement in carcass composition.

He said further studies will be conducted on using hormones in this way.

LOW-ENERGY RATION—Gilts will reach sexual maturity earlier if fed a low-energy ration, according to Mr. Day.

In University tests, gilts on a low-energy ration reached sexual maturity at an average age of 174 days compared to 182 days for the full-fed group. Mr. Day said the study was to determine the effect of two levels of energy in the ration on reproductive performance in gilts.

Limited-fed gilts also showed more sexual receptivity at breeding time and fewer reproductive irregularities than the full-fed gilts. Gilts fed the low-energy ration weighed an average of 21 lb. less than full-fed gilts at time of puberty.

Full-fed gilts had access to a self-feeder containing a complete mixed ration. Limited-fed gilts got the same amount of protein supplement and about 75% as much corn as was consumed by the full-fed group.

These gilts were bred later to furnish information on ovulation rate and early embryonic mortality rate. The one group was continued on limited feed except for a short period of full feeding just before the gilts were bred.

Not much difference was found from the two treatments in the number of gilts that became pregnant or in the ovulation rates. Neither was there much difference in number of living embryos present on the 25th day of gestation.

One advantage of early maturity is that gilts will then usually have more heat periods before being bred. Mr. Day also said a gilt usually ovulates more eggs at each successive heat period. This makes bigger litters possible.

Mr. Day noted the advantage of increasing the nutritional level of gilts immediately prior to breeding. It has been shown that the ovulation rate decreases if gilts are limited-fed immediately prior to breeding. However, when limited-fed gilts are "flushed" for two or three weeks before breeding, little difference has been found in ovulation rates of limited-fed and full-fed gilts.

ANTIBIOTICS DURING BREEDING SEASON—Preliminary University of Missouri tests indicate there may be some advantage in feeding antibiotics to sows during the breeding season.

Results of the first test were promising enough that a similar experiment on a larger scale is now in progress, according to B. T. Dean, animal husbandry graduate assistant.

Twelve aged sows were divided into two groups. Six sows were fed a high level of antibiotics starting one week before the breeding season began. The antibiotic treatment continued for three weeks. The other six sows received no antibiotic.

Sows receiving the antibiotic farrowed an average of 13 pigs compared to 10.66 for the other group. Average number weaned was 9.8 compared to 8.5, also in favor of the antibiotic treatment.

Another part of this study was set up to determine value of antibiotics for sows at farrowing time. Results showed no boost from antibotics fed from the 109th day of gestation to two weeks after farrowing.

The antibiotic used in the test was oxytetracycline (Terramycin).

AMINO ACID SUPPLEMENTS—Amino acid supplements proved valuable in swine rations somewhat low in protein in swine tests at the University of Missouri. But even with the amino acid supplements, these rations were not as effective as rations higher in protein, according to Dr. Tribble.

Dr. Tribble noted that most hog rations are generally thought to be deficient in three amino acids—lysine, methionine and tryptophan. Objective of the university research was to study effects of adding one or more of these amino acids to rations for growing-fattening hogs.

In one part of the test, adding the three amino acids to a 13% protein ration greatly increased rate and efficiency of gains. Pigs on the straight ration gained .99 lb. per day and used 406 lb. of feed per 100 lb. of gain. Pigs receiving the same ration plus the three amino acids gained 1.44 lb. per day on 321 lb. of feed.

Similar results were obtained in a second study using a ration made up of corn, mineral and vitamins containing 8.4% protein. However, the boost from the amino acids was not quite as great.

Dr. Tribble noted that in the second test the addition of one amino acid, lysine, improved gains and efficiency almost as much as adding all three amino acids. Another result of this study was that a corn-soybean ration gave better results than the corn rations with the amino acids. However, the corn-soybean ration contained 11.4% protein compared to 8.4% in the amino acid rations. Both rations were supplemented with vitamins and minerals.

In a third test, pigs getting a 16% protein ration gained faster and more efficiently than those on a 13% ration supplemented with amino acids.

Conclusions

Dr. Tribble concluded that these research results to date are not conclusive enough for general recommendations. However, he did recommend for practical use two rations used in this study.

One recommended ration is for pigs from weaning to 125 lb. It is a 16% protein ration made up of corn, soybean oil meal, vitamins, minerals and antibiotic.

The other ration recommended by Dr. Tribble is for hogs 125-200 lb. It has the same ingredients as the previous ration, but in different proportions. It has a 12% protein content.

FEEDING LEVELS DURING GESTATION—The old rule "Don't get your sows too fat during gestation," still appears to be a good one.

Mr. Dean said one test showed a definite relationship between the change in sows' backfat thickness during gestation and number of pigs farrowed. For each increase of one millimeter in backfat thickness, there was a decrease of .15 pig per litter.

Mr. Dean reported on a study of effects of feeding levels during gestation on sow performance. Results varied somewhat, but the researcher still concluded that too much feed during gestation is harmful.

Protein, mineral and vitamin levels of the gestation ration need especially careful attention, Mr. Dean noted.

In the first test in this series, one group of gilts received 1¼ lb. of protein supplement plus 5 lb. of shelled corn per head per day. Another group received the same amount of supplement, but only 3 lb. of corn.

The limited-fed gilts farrowed more pigs per litter than the other group—9.87 compared to 8. The limited-fed groups also weaned more pigs.

In a second test, a complete mixed ration was used. One lot received 6 lb. per head per day for the first month, and 5 lb. per day for the remainder of gestation.

The limited-fed group got 4 lb. per day for the first month, 3 lb. for the following three weeks and 2 lb. for the following two months. This amount was increased to 3 lb. during the last month of gestation.

In this trial the limited-fed group farrowed 9.5 pigs compared to 10.1 for the normally-fed group. However, the limited-fed group did wean more pigs.

In a third test, one lot of gilts was fed 6 lb. of a 15% protein mixture per day. Another lot received 4 lb. per head per day.

Again, the normally-fed sows farrowed the most pigs—8 compared to 6.87. Pigs from the limited-fed sows appeared weak and indicated a deficiency of protein, minerals or vitamin in the limited ration.

Sows on limited feed during gestation ate more feed during lactation than those on normal rations. But considering both gestation and lactation, the limited-fed sows consumed about 209 lb. less feed.

Backfat probes indicated sows on limited feed lost fat during gestation, while the sows on normal feed gained fat.

Mr. Dean summarized the research by making this recommendation: Feed 1-1¼ lb. protein supplement containing adequate minerals and vitamins per head per day to sows during gestation in dry lot. Reduce this amount to ¾-1 lb. if on good pasture. Feed only enough grain to maintain desired condition.

RAINS EASE PRESSURE FOR CATTLE SALE

PULLMAN, WASH.—Recent rains which soaked wide areas in the Southwest and the northern Great Plains, plus considerable moisture in other parts of the West, will enable cattlemen in these regions to keep more of their cattle, it was pointed out recently by ag economists at Washington State College.

However, they said, stockmen in these areas still are likely to sell more animals than they did last fall. The cattlemen have more animals on hand, and the rains came too late to keep their feed supplies from being substantially smaller than last year.

Because of severe drouth and poor pastures, ranges and feed crops in much of the West, it had been expected that cattlemen would sell cows, calves, heifers and steers more freely this fall than a year earlier and that prices would be weaker.

SURVEY

(Continued from page 6)

News also says that contractors are being very selective and cautious, and many are cutting back.

NEPPCO reports that idle house capacity is up a little more this month, an estimated 15% or more over-all. Movement of broilers to market is on schedule, mostly at about nine weeks of age.

Firmer chick prices were noted during July and early August, which NEPPCO News says were mostly due to elimination of distress chicks and in some instances actual increases of ½@1¢.

Regarding low broiler prices in July and August, the report said that most persons who had expected higher prices apparently failed to take into account the full effects of non-commercial area and farm supplies and the competition from lower priced pork and beef.

Feed Company, Poultry Firm in Court Dispute

LEWISTON, MAINE—Thirteen suits totaling $1,073,000 have been filed by the Beacon Milling Co. against the Hillcrest Poultry Co. and several of its allied firms in Androscoggin Superior Court here. At the same time, suits totaling more than $300,000 were brought by Hillcrest and one of the allied companies against the milling firm.

Two actions, involving a little less than $100,000, were based on the sale of grain to two companies associated with Hillcrest Poultry Co. Other associated firms are being sued because of a sales guarantee arrangement, according to an attorney for Beacon.

In the counter-suits filed by the Hillcrest firm and Cotton Mountain Farms, Inc., against Beacon it was alleged that grain and mash sold to the Hillcrest firm were faulty.

FIRM INCORPORATES

MENLO PARK, CAL.—The ADS Co. has been incorporated to sell grain driers, with a capitalization of $50,000. Principal owners of the Menlo Park firm are H. R. Ketterbaugh and George A. Andrews.

MARKETS

(Continued from page 2)

ing feeds accounting for the bulk of the turnover, followed by turkey, dairy and broiler feeds.

Sales were also hampered, as usual this time of year, by afterfeed in the fields.

The ingredient market was mixed during the week. Corn was off 1¢, but oats, barley and feed wheat held steady. Animal tallow had a little better undertone, but held unchanged at 6¾¢ lb. Soybean oil meal (44% and 50%) rose about 50¢. Cottonseed oil meal held steady. Gluten meal declined $3 late in the previous week. Fish meal and meat scraps were weak and susceptible to offers. Brewers' grains advanced 50¢@$1, but hominy feed, and gluten feed held steady. Distillers' grains continued unchanged in a wide range of quotes. Alfalfa meal turned a little weaker.

Running time of formula feed manufacturers varied last week, with some working 32 hours and others down to 24 hours.

South Central

Feed business has been rather dull this week and some mills will be forced to curtail operations to less than four days. Anticipating at least one day of heavy mill door deliveries following the holiday shut down, warehouse stocks were pretty well filled out last week. But most mills were disappointed with their post-holiday business and few have needed the extra stocks.

No great change in the pattern of business has been noted. Hog feed volume is off seasonally, but it is still considered the "bread and butter item" for the mills. Laying feeds seem to be moving a little better following the higher returns from eggs. Frequent showers are keeping pastures in good enough condition to limit the need for dairy feeds.

Some lack of interest may be due to preoccupation with the approaching soybean and corn harvest. Unseasonably hot weather is hastening the maturity of these fall crops and early soybeans are now being harvested.

Mountain States

Formula feed sales volume declined somewhat from the previous week.

Because of increased turkey dressing off, turkey feed demand dropped off. Still, the total volume in the state is up somewhat from a year ago at this time. This is due largely because there is a greater volume of turkeys being raised in the state.

The cattle feed business has been off somewhat in the past week due to the fact that cattle are just starting to move into the feed lots. However, the cattle have not started in large volumes as yet. Consequently, the turkey feed business has been the greatest business in the formula feeds in this area in the past week.

All of the formula feeds are being purchased at the present time on a hand-to-mouth basis.

Ohio Valley

Formula feed sales activities were at the seasonal low over the long Labor Day week end, and business continued at a slow pace this week as the Ohio Valley area remained blanketed with more of the hot and humid weather that had been experienced through practically all of August and most of the early days of September.

Sales of chicken and turkey feeds are at about the low point for this year, as compared with brisk demands for these feeds during recent autumn periods. Dairy feeds are the only ones showing any current activity. Farm prices for eggs and poultry remain fairly steady, but the market is dull, and is expected to remain so until much cooler weather arrives to inspire better consumer demand.

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Pacific Northwest

Feed ingredient price losses barely offset gains during the week's Pacific Northwest trading which continued to be marked by an irregular quotation trend for important items.

Offerings of some important feedstuffs continued seasonally larger and were met by narrow buying interest at Portland and Seattle. Cottonseed and soybean meals were priced $2.50 and $1.50 ton lower, respectively, as the trade placed them on a new crop basis.

Domestic copra meal supplies were limited and prices advanced $3 ton while wheat millfeed prices were unchanged to $1 ton lower. Feed barley prices advanced $1 ton, while milo values dropped $2 ton during the trading period.

Formula feed sales improved the past week with cooler temperatures and rain showers stimulating feeding demands.

Alfalfa hay markets in this region appeared to be holding fully steady to firm with a wide range of prices, depending mostly upon quality, amounts purchased and producing district. No. 2 green alfalfa is selling at Portland and Seattle at $34@35 ton, baled, with some sales to $37 ton at Portland.

R. H. Teal, Oregon State College seed and grain marketing specialist, reported during the week from Corvallis, Ore., that a record amount of hay was fed throughout Oregon in 1958 and that another heavy feeding season would deplete available supplies and drive prices even higher than they now are by next spring.

He advises livestock feeders to stretch the available hay supply by substituting more grain and other forage.

Illinois Feed Meeting

KNOXVILLE, ILL. — The Illinois Feed Assn. will sponsor a regional feed meeting for the Galesburg area Sept. 22 in Knoxville.

Illinois feed retail and wholesale dealers will hear panel discussions on grain banks, bulk feed handling and direct selling. Members of the direct selling panel will include Elmer Roth, Honeggers' & Co., Fairbury, moderator, and J. C. Van Antwerp, Van Brokerage Co., Galesburg, program chairman.

Golf, Barbecue Set

SACRAMENTO — The lower San Joaquin valley district of the California Hay, Grain & Feed Dealers Assn. will hold its second annual golf tournament and barbecue Sept. 24 at the Belmont Country Club, Fresno.

A bowling tournament has been scheduled for non-golfers at Fresno's Sunnyside Alleys.

John Hosmon, E. D. Wilkinson Grain Co., and Arne Jalonen, Topper Feed Mills, both of Fresno, are in charge of the event.

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